

## Repair Manual

New Beetle 1999 ➤ , Touran 2003 ➤ ,  
Phaeton 2003 ➤ , Touareg 2003 ➤ ,  
Sharan 1996 ➤ , New Beetle RSI 2001 ➤ ,  
Polo 2002 ➤ , New Beetle Cabrio 2003 ➤ ,  
Golf 2004 ➤ , Passat 2006 ➤ ,  
Golf Plus 2005 ➤ ,  
Passat Variant 2006 ➤ , Eos 2006 ➤ ,  
Tiguan 2008 ➤ , Scirocco 2009 ➤ ,  
Golf Variant 2007 ➤ , Golf 2009 ➤ ,  
Jetta 2005 ➤ , Jetta 1999 ➤ ,  
Golf Plus 2009 ➤ , Polo 2010 ➤ ,  
Golf Variant 2010 ➤ , Jetta 2011 ➤ ,  
CC 2010 ➤ , Touareg 2010 ➤ ,  
Sharan 2011 ➤ , Polo KH IN 2010 ➤ ,  
Polo Lim IN 2011 ➤ ,  
Polo Lim RUS 2011 ➤ , Passat 2011 ➤ ,  
Passat Variant 2011 ➤ ,  
Golf Cabriolet 2012 ➤ , Beetle 2012 ➤ ,  
Passat (NMS - US) 2012 ➤ , up! 2012 ➤ ,  
The Beetle Cabriolet 2012 ➤ , CC 2012 ➤ ,  
e-up! 2014 ➤ , e-Golf 2014 ➤ ,  
Polo KH MY 2014 ➤ ,  
Polo Lim MY 2014 ➤ , Golf 2015 ➤ ,  
Jetta 2013 ➤ , Polo 2014 ➤ ,  
Scirocco 2015 ➤ , Jetta 2015 ➤ ,  
Polo KH IN 2015 ➤ , Touareg 2015 ➤ ,  
Polo KH MY 2015 ➤ ,  
Golf Variant 2015 ➤ ,  
Passat (NMS - US) 2016 ➤ ,  
Polo Lim IN 2016 ➤ ,

Polo Lim MY 2016 ➤ ,  
Polo Lim RUS 2016 ➤ , Sharan 2016 ➤ ,  
The Beetle Cabriolet 2017 ➤ ,  
The Beetle 2017 ➤ , Ameo 2017 ➤ ,  
e-up! 2017 ➤ , up! 2017 ➤ , Atlas 2017 ➤ ,  
e-Golf 2017 ➤ , Tiguan MEX 2017 ➤ ,  
Golf MEX 2018 ➤ ,  
Golf Variant MEX 2018 ➤ , Jetta 2018 ➤ ,  
Touareg 2018 ➤ ,  
Passat (NMS - US) 2019 ➤ ,  
e-up! 2020 ➤ , up! 2020 ➤ , Atlas 2020 ➤ ,  
Atlas (PA) 2020 ➤ ,  
Polo Lim RUS 2020 ➤ , Taos Mex 2021 ➤ ,  
Taos Arg 2021 ➤ , Tarek Russia 2022 ➤ ,  
Tiguan MEX 2022 ➤ , Jetta 2022 ➤ ,  
Atlas (PA) 2024 ➤ ,  
Cross Sport PA 2024 ➤ , Jetta 2025 ➤

## Paint General Information

Edition 07.2024



## List of Workshop Manual Repair Groups

### Repair Group

00 - General, Technical Data



Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.



# Service







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## 00 – General, Technical Data

### 1 Safety Precautions

(Edition 07.2024)

K0059211721 - FU - 9/10/2024 FUJY 7.2024

⇒ ["1.1 Safety Precautions when Painting Vehicles with Natural Gas", page 1](#)

⇒ ["1.2 Safety Precautions when Painting Vehicles with Electric Drive", page 2](#)

#### 1.1 Safety Precautions when Painting Vehicles with Natural Gas



##### DANGER!

*Extremely dangerous due to too high of drying temperatures! High temperatures increase the pressure in the natural gas- or liquid petroleum gas (LPG) fuel tank. Too much pressure can cause a natural gas or liquid petroleum gas (LPG) fuel tank to burst and can therefore result in death or severe body injuries.*

*High temperatures activate the shut-off valve circuit breaker on natural gas fuel tanks. For LPG fuel tanks, the pressure relief valve is activated due to the pressure increase caused by the high temperature. Gas escapes from the natural gas or LPG fuel tank and may in particular ignite by sparks, causing flash fires. Death and severe body injuries are the result.*

- ◆ *Never expose gas-carrying components to a temperature over +60 °C (140 °F).*
- ◆ *When drying at over +60 °C (140 °F) in a drying oven, remove the entire natural gas or LPG fuel tank and ventilate all natural gas lines.*
- ◆ *When IR drying, never expose gas-carrying components of the high pressure reservoir system to a temperature over +60 °C (140 °F).*

Observe the safety precautions and additional information when working on »LPG« or »CNG« vehicles:

Pay attention to the safety precautions. Refer to ⇒ Natural Gas Drive - General Information; Rep. Gr. 00 ; Safety Precautions .

Pay attention to the safety precautions. Refer to ⇒ Fuel Supply - Natural Gas Engines; Rep. Gr. 00 ; Safety Precautions .

Fuel Tank, Removing. Refer to ⇒ Fuel Supply - Natural Gas Engines; Rep. Gr. 20 ; Fuel Tank; Fuel Tank, Removing and Installing .

Additional notes:

- ◆ Refer to the ⇒ Self-Study Program Number 262; Natural Gas - an Alternative Fuel for Vehicles .
- ◆ Refer to ⇒ Self-Study Program Number 373; The EcoFuel Natural Gas Drive in Touran .
- ◆ Refer to ⇒ Self-Study Program Number 425; The EcoFuel Natural Gas Drive with 1.4L 110 kW TSI Engine .



- ◆ Refer to ⇒ Self-Study Program Number 427; The BiFuel Autogas System .
- ◆ Refer to ⇒ Self-Study Program Number 528; The Natural Gas Drive in Golf/Golf Wagon TGI Blue Motion .

## 1.2 Safety Precautions when Painting Vehicles with Electric Drive



### Caution

***Risk of damaging the battery cells at too high of drying temperatures!***

- ◆ ***Observe the maximum drying time of 30 minutes at a drying temperature of +80 °C (176 °F).***
- ◆ ***Observe the maximum drying time of 45 minutes at a drying temperature of +60 °C (140 °F).***
- ◆ ***Protect all high-voltage components from direct infrared radiation when IR drying.***

**Observe the safety precautions when working on the electric drive:**

Refer to ⇒ Rep. Gr. 00 ; Safety Precautions .

### Golf 2009 e-BlueMotion

The above named drying information applies only to the Golf MY 2009 e-BlueMotion. For this vehicle the high-voltage battery must be removed before heated drying.





## 2 General Information

⇒ [“2.1 Factory Paint Paint Structure”, page 3](#)

⇒ [“2.2 Customer Service Paint Paint Structure”, page 5](#)

⇒ [“2.3 Fundamental Procedure when Processing Areas Sanded Through to Base Surface \(Bare Metal\)”, page 9](#)

⇒ [“2.4 Reduced Paint Structure in Engine Compartment and Inner Hood”, page 10](#)

⇒ [“2.5 Repair Instructions for Underbody and Stone Chip Protection”, page 10](#)

⇒ [“2.6 Window Glass Flange Instruction”, page 12](#)

⇒ [“2.7 Adhesive Surface Pretreatment when Replacing Laser-Soldered Roofs”, page 14](#)

⇒ [“2.8 Fender Corrosion Protection in Wheel Housing Liner Contact Area”, page 18](#)

⇒ [“2.9 Fold Corrosion Servicing Notes”, page 19](#)

⇒ [“2.10 Corrosion Protection for Body, Attached and Welded Parts”, page 21](#)

⇒ [“2.11 Parking Aid Sensor, Painting”, page 22](#)

⇒ [“2.12 Adaptive Cruise Control \(ACC\)”, page 23](#)

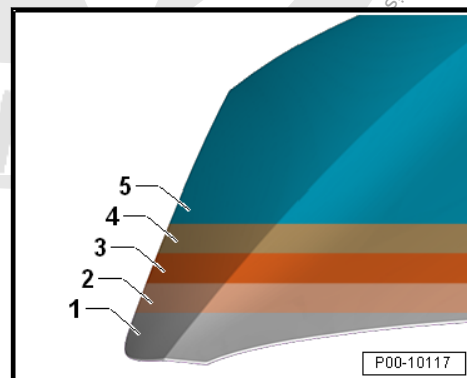
⇒ [“2.13 Bumper Cover Painting Instructions in Lane Change Assistance Control Module Area”, page 24](#)

### 2.1 Factory Paint Paint Structure

**Structure of a solid-color paint system, standard**

Approximately 80-120 µm thick

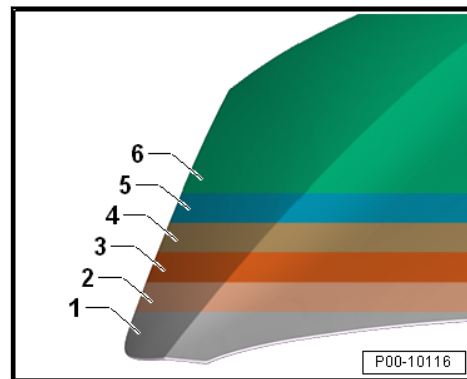
- 1 - Steel Panel
- 2 - Zinc Phosphate Coating
- 3 - Electrophoretic Dip Primer
- 4 - Intermediate Filler
- 5 - Two-Part Solid Top Coat



**Structure of a solid-color paint system, water-based paint**

Approximately 80-130 µm thick

- 1 - Steel Panel
- 2 - Zinc Phosphate Coating
- 3 - Cathodic Electrophoretic Painting
- 4 - Water-Based Filler
- 5 - Water-Based Paint
- 6 - Two-Part Clear Coat

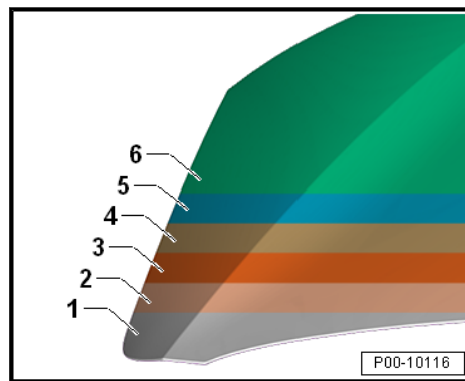




### Structure of a metallic and pearl color paint system, water-based paint

Approximately 80-130 µm thick

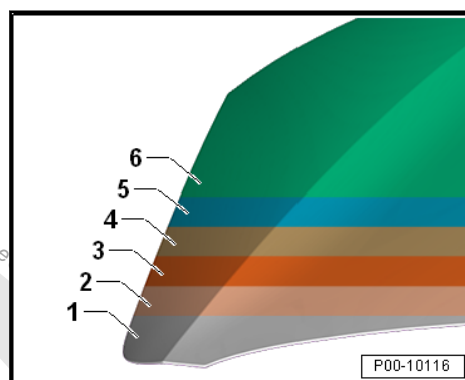
- 1 - Steel Panel
- 2 - Zinc Phosphate Coating
- 3 - Cathodic Electrophoretic Painting
- 4 - Water-Based Filler
- 5 - Water-Based Metallic/Pearl Color Base Coat
- 6 - Two-Part Clear Coat



### Structure of a two-coat paint system, standard

Approximately 100 µm thick

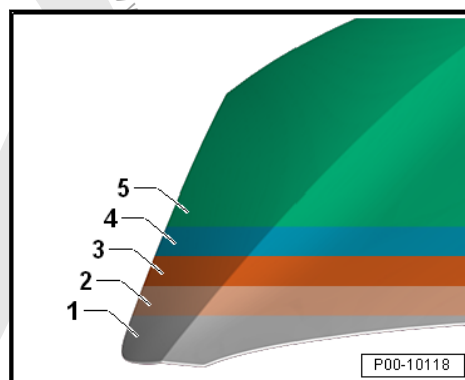
- 1 - Steel Panel
- 2 - Zinc Phosphate Coating
- 3 - Cathodic Electrophoretic Painting
- 4 - Intermediate Filler
- 5 - Solid Top Coat
- 6 - Two-Part Clear Coat



### Structure of a 2010 paint process paint system, water-based paint

Approximately 80-120 µm thick

- 1 - Steel Panel
- 2 - Zinc Phosphate Coating
- 3 - Cathodic Electrophoretic Painting
- 4 - Water-Based Paint (Functional Coating)
- 5 - Two-Part Clear Coat

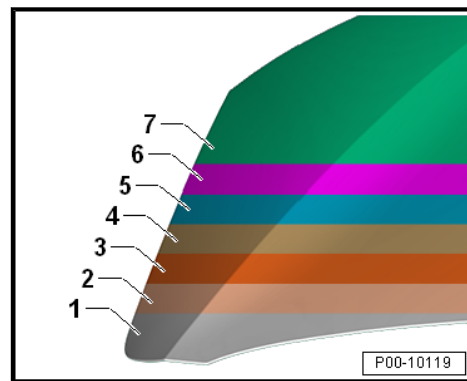




## Structure of a three-coat paint system, water-based paint

Approximately 80-140 µm thick

- 1 - Steel Panel
- 2 - Zinc Phosphate Coating
- 3 - Cathodic Electrophoretic Painting
- 4 - Water-Based Filler
- 5 - Water-Based Paint (Pigmented Basic Color)
- 6 - Water-Based Paint (Effect Coating)
- 7 - Two-Part Clear Coat



### Note

- ◆ *The approximate specification for the layer thickness can vary depending on the color and illustrates the differences in vertical and horizontal surfaces.*
- ◆ *The specifications can be exceeded on individual vehicles when painting a second or multiple times. This however does not have to be mentioned.*

## 2.2 Customer Service Paint Paint Structure

⇒ ["2.2.1 Base Paint Structure", page 5](#)

⇒ ["2.2.2 Matte Effect Painting Paint Structure", page 8](#)

### 2.2.1 Base Paint Structure

#### Galvanized sheet metal on both sides

Previous attempts to match flanges have led to the use of only galvanized sheet metal on both sides. Only here do the cathodic protection and the zinc coating barrier effect work optimally together. The cut edges that are poorly protected with paint (thinning edges) are additionally protected.



### Note

- ◆ *Make sure that*
- ◆ *All metal edges are properly deburred when performing a body repair.*
- ◆ *the zinc and cathophoretic layer is completely present on the interior surfaces that are not painted.*
- ◆ *The inner weld flanges and the sanded-through areas are reworked with Inox Spray - D 007 600 A1- or zinc spray.*

### Smoothing Work

To reestablish the contour of the body surfaces, the smoothing materials today in body construction and in the paint finishing system are considered to be essential. Pay attention to the different preparations for the base surface.

- ◆ *The metal filling paste requires a base that is bare metal and is as coarse as possible. The best adhesion and anti-corrosion properties can be best achieved with the Pneumatic Brush Grinder Set - VAS 6446A- .*





- ◆ Spray and polyester filler paste acts as a hydrophilic. That means they absorb moisture like a sponge. Therefore the bare metal surfaces must be insulated. The Two-Part Wash Primer - LHV 043 000 A2- and then the Two-Part HS-Performance Filler are used as insulation before the filler paste.

#### Product information:

- ◆ Refer to ⇒ ["3.3 Filling Paste", page 73](#)

#### Primer

The primer is the most important component of the corrosion protection system, because it prevents water and oxygen from accessing the metal surface. Original replacement parts are normally coated with a black or gray cathoretic dip coating (CDC). The primer type is dependent on the area of application.

- ◆ The cathoretic primer is not UV and acid resistant. Body components that are in the areas that are at risk, such as the front end, fenders and wheel housings must then also be coated from the inside with a spray of base coat and clear coat. On inner-lying body surfaces, such as on the roof or side panels with a complete trim panel, it is sufficient if cracks and bare surfaces are sealed with glass/paint primer. In case of doubt, the production status applies.
- ◆ When body parts that have been worked on are delivered, watch out for any rust film. Cleaning or intermediate sanding may be necessary.
- ◆ Sanded-through areas or weld seams must be recoated as quickly as possible with corrosion protection.



#### Note

- ◆ *Areas sanded through to the base surface (bare metal) and that have had corrosion repair are to be primed with Two-Part Wash Primer - LHV 043 000 A2- and then filled with Two-Part HS Performance Filler*
- ◆ *Make sure when treating the Two-Part Wash Primer - LHV 043 000 A2- that it is always mixed anew before the application, and that a dry coat thickness of at least 10-12 µm has been reached.*

#### Product information:

- ◆ Refer to ⇒ ["3.4 Primer Metal", page 92](#)
- ◆ Refer to ⇒ ["3.5 Plastic Primer", page 104](#)

#### Filler

The filler contributes to corrosion protection to a lesser extent. A suitable filler is, however, essential in service.

#### Tasks:

- ◆ Filler protects the body from stone impact. Therefore pay attention to the appropriate layer thickness in the stone chip protection area.
- ◆ Filler serves as surface preparation. Sanding scratches can be smoothed out.
- ◆ Colored filler improves the coverage of colors with poor covering properties.

#### Product information:

- ◆ Refer to ⇒ ["3.6 Filler", page 106](#)





## PVC Sealed Seams and Underbody Protection



### Note

- ◆ *When repairing, the seam sealant is to be returned to replicate stock visual appearance and layer thickness.*
- ◆ *Sealing seams near attachments to be installed must be applied smoothly in order to avoid damage and malfunctions.*
- ◆ *Water drain holes must stay clear.*
- ◆ *All threaded pins and weld nuts with M-threads, as well as all other pins and contact surfaces for the assembly must be functional after the sealant application.*
- ◆ *The sealing material cannot be applied on blank sheet metal, but rather on filled surfaces.*

To prevent any water from entering the flange, the notch is sealed with paste-like, solvent-free PVC in critical areas on the body. A PVC coating of different thickness is sprayed on specified areas on the underbody and in the wheel housings to protect against stone impact and engine humming.



### Note

- ◆ *After a corrosion repair, insulate the bare metallic base surface with Two-Part Wash Primer - LHV 043 000 A2- and then fill with Two-Part HS Performance Filler .*
- ◆ *For the underbody protection, pay attention to the specified layer thickness.*

### Product information:

- ◆ Refer to ➤ [“3.12 Underbody Protection”, page 272](#)
- ◆ Refer to ➤ [“3.13 Stone Chip Protection”, page 284](#)
- ◆ Refer to ➤ [“3.15 Sealing Materials”, page 296](#)

### Base Paint

For the base coat, the decorative application is the main consideration. This contributes to corrosion protection to a lesser extent.

Depending on the pigment content, the colors have different coverage. Observe the manufacturer's instructions.

### Product information:

- ◆ Refer to ➤ [“3.7 Top Coats”, page 160](#)

### Clear Coat

For the clear coat, the decorative application is the prime consideration. The clear coat also contributes to corrosion protection to a lesser extent. The clear coat protects the top coat/base paint against UV radiation and environmental pollution such as acidic bird droppings.

### Product information:

- ◆ Refer to ➤ [“3.8 Clear Coats”, page 207](#)

### Conservation wax

The conservation wax/cavity sealants play a decisive role for corrosion protection. Depending on the area of application, different materials are available in service. The exceptional protec-



tive effects of these materials is based on the following characteristics:

- ◆ hydrophobic (water repellent)
- ◆ good adhesion
- ◆ no rust formation
- ◆ water vapor permeability approximately 1,500 times lower than with a paint coating of the same thickness

**Product information:**

- ◆ Refer to ⇒ ["3.11 Preservation", page 269](#)
- ◆ Refer to ⇒ ["3.14 Wax Underbody Protection", page 291](#)

## 2.2.2 Matte Effect Painting Paint Structure

### Technology

On vehicles with matte effect only the regulations for painting with a matted clear coat apply. The application can take place directly on the base paint or on an existing clear coat.

There is a risk of cloudiness from too dry of application due to uneven drying or due to unabsorbed spray mist. For this reason large surfaces should be painted early in the morning. It could be the case that the work order must be moved a few days.

### Base paint color structure

Due to the matte structure of the clear coat the color and the pigmentation effect of the base paint can not be clearly allocated. For this reason it is recommended, to prepare two to three versions of the base paint in the foreground of the sheet metal.

### Matte clear coat color structure

It is recommended to use a gloss level measuring device.

Despite the gloss level measurement three different matte levels should be applied.

### Application

To obtain a homogeneous material effect, the following is recommended:



#### Note

- ◆ *To reach the determined matte level, the clear coat must be mixed using a scale.*
- ◆ *The spraying distance to the object is larger than the standard application, to use the full atomization of the spray mist.*
- ◆ *It is advisable to apply both spray applications in cross coats on horizontal replacement parts. (To prevent streaking).*
- ◆ *Pay attention that there is even overlap of the spray passes and that enough wet spray film is applied.*
- ◆ *When applying to large objects, the overlap area of the second spray application must not lay in the overlap zone of the first spray application and should instead be moved.*
- ◆ *If possible, an entire painting process should be divided up in sections, meaning the vehicle body is separated into attachments, and painted in order to prevent overlapping zones and spray mist.*
- ◆ *Make sure that the matting can change over time.*

Applies in principle:

- Spot repair is not required.
- Air drying is not recommended.
- In the regulation a base painting is required.
- Glossy spots can only be eliminated by new painting in the regulation

Because the matte clear coat cannot be reworked, pay attention to the following notes, to prevent dust inclusions:

- The vehicle must be kept in a completely clean condition from the outside. An underbody wash or the use of a steam cleaner in the foreground is recommended.
- The paint booth should also be completely clean. A filter change shortly beforehand may be preferred. But then only as the second or third work order, because a lot of dust is stirred up right after a filter replacement.
- Scrub the components thoroughly after sanding and clean with Silicone Remover .
- Sufficiently tape off the vehicle. Cover the painting stand.
- Clean all components to be painted again using Duster - VAS 6177- before painting.

## 2.3 Fundamental Procedure when Processing Areas Sanded Through to Base Surface (Bare Metal)



#### Note

*Areas sanded through to the base surface are to be primed with Two-Part Wash Primer - LHV 043 000 A2- and then filled with Two-Part HS Performance Filler .*



## 2.4 Reduced Paint Structure in Engine Compartment and Inner Hood



### Note

*The paintwork in the "engine compartment and the inner hood" may differ from the paint structure and color on the exterior paintwork. This variation is production-related and should not be deemed defective. Recreate the production status.*

## 2.5 Repair Instructions for Underbody and Stone Chip Protection



### Note

- ◆ *The underbody and stone chip protection structure must be restored back to its original layer strength and appearance during a repair.*
- ◆ *Water drain holes must stay clear.*
- ◆ *All threaded pins and weld nuts with M-threads, as well as all other pins and contact surfaces for the assembly must be functional after the sealant application.*

### Damage caused by an accident (part replacement)

- Clean the new part with Silicone Remover, Long .
- Sand the factory primer (sanding pad).
- Clean again using Silicone Remover, Long .
- Apply Two-Part Wash Primer - LHV 043 000 A2- to sanded through areas.
- Dry (pay attention to the drying time).
- Then fill with Two-Part HS Performance Filler .
- Dry (pay attention to the drying time).
- Dry-sand the filler with sandpaper (P400-P500), making sure not to sand through.
- Clean the surface with Silicone Remover, Long .
- Apply a suitable Stone Chip Protection . Refer to ➤ ["3.13 Stone Chip Protection", page 284](#) .
- Dry (pay attention to the drying time).
- If necessary, smoothen the texture.
- Clean the base surface with Silicone Remover, Water-Based .
- Apply the paint structure with top, base and clear coats.

### Damage caused by an accident (repair)

- Always clean damaged components/surfaces.
- Remove the underbody protection using the Pneumatic Brush Grinder Set - VAS 6446A- .
- Remove the damaged area and sand down to the bare metal.



- Remove any existing corrosion using the Pneumatic Brush Grinder Set - VAS 6446A- ; while doing so, finely sand the overlapping areas.
- Clean the base surface with Silicone Remover, Long .
- Apply Two-Part Wash Primer - LHV 043 000 A2-
- Dry (pay attention to the drying time).
- Then fill with Two-Part HS Performance Filler .
- Dry (pay attention to the drying time).
- Sand the filler.
- Clean the base surface with Silicone Remover, Long .
- Apply suitable filling paste.
- Sand the filling paste with sandpaper (P80-P240) while liberally sanding the transition areas.
- Clean the base surface with Silicone Remover, Long .
- Apply Two-Part Wash Primer .
- Then fill with Two-Part HS Performance Filler .
- Dry (pay attention to the drying time).
- Dry-sand the filler in the stone chip protection area with sandpaper (P400-P500), making sure not to sand through.
- Clean the surface with Silicone Remover, Long .
- Apply a suitable Stone Chip Protection . Refer to ["3.13 Stone Chip Protection", page 284](#) .
- Dry (pay attention to the drying time).
- If necessary, smoothen the texture.
- Sand the complete filler surface with sand paper (P400-P500).
- Clean the base surface with Silicone Remover, Water-Based .
- Prepare the paint structure with top, base and clear coats.

### Cracks in the stone chip protection



#### Note

*Repairs should be performed according to description "damage caused by an accident (repair)".*

### Damage caused by stone impact (gravel, grit, etc.)

- Clean the damaged areas thoroughly.
- Sand the damaged surfaces with sandpaper. If damage is deep, dry-sand with P120-P240 sandpaper.
- Clean the base surface with Silicone Remover, Long .
- Apply Two-Part Wash Primer - LHV 043 000 A2- to sanded through areas.
- Dry (pay attention to the drying time).
- Then fill with Two-Part HS Performance Filler .
- Dry (pay attention to the drying time).



- Dry-sand the filler with sandpaper (P400-P500), making sure not to sand through.
- Clean the base surface with Silicone Remover, Long .
- Apply a suitable Stone Chip Protection (refer to ⇒ [“3.13 Stone Chip Protection”, page 284](#) ) on the damaged areas. If damage is extensive, refinish the entire surface.
- Dry (pay attention to the drying time).
- If necessary, smoothen the texture.
- Clean the surface with Silicone Remover, Water-Based .
- Apply the paint structure with top, base and clear coats.

## 2.6 Window Glass Flange Instruction



### Note

- ◆ *Repainting is permitted when using the same vehicle color.*
- ◆ *If a window opening must be repainted, tape off all around the adhesive surface on the window glass flange beforehand.*

**New part and component are without damage in the window glass flange.**

- Thoroughly clean the window glass flange with Silicone Remover .
- Sand the cathaphoretic dip coating (CDC) primer with sanding pad (red).
- Then apply Two-Part HS Wet-in-Wet Filler .



### Note

- ◆ *Pay attention to the drying time of the Two-Part HS Wet-in-Wet Filler at +60 °C (140 °F) object temperature.*
- ◆ *60 - 150 µm: 15 - 20 minutes*
- ◆ *150 - 250 µm: 20 - 25 minutes*
- ◆ *For additional information about Two-Part HS Wet-in-Wet Filler , refer to ⇒ [“3.6.3 Two-Part HS Performance Filler”, page 120](#) .*
- ◆ *Alternatively Two-Part HS Wet-in-Wet Filler can also be used. Note the additional information on Two-Part HS Wet-in-Wet Filler . Refer to ⇒ [“3.6.5 Two-Part HS Wet-in-Wet Filler”, page 131](#) .*
- Lightly dry-sand the filler with sandpaper (P400-P500), making sure not to sand through.
- Then clean using Silicone Remover .
- Tape off the adhesive surface on the window glass flange using suitable heat-resistant and solvent-resistant adhesive tape. This prevents adhesive residue.
- If necessary, paint the window opening in the vehicle color.
- To prevent sharp edges, remove the adhesive tape from the window glass flange after the last spray application.





- Install the windshield. Refer to ⇒ Body Exterior; Rep. Gr. 64 ; Windshield; Windshield, Removing and Installing .
- Install the rear window. Refer to ⇒ Body Exterior; Rep. Gr. 64 ; Rear Window; Rear Window, Removing and Installing .

#### **Component with damage (base surface visible) in the window glass flange**

- Thoroughly clean the window glass flange with Silicone Remover .
- Dry-sand the repair area with sandpaper (P100).
- Clean the base surface with Silicone Remover .
- Apply Two-Part Wash Primer - LHV 043 000 A2- on the repair area.
- After a flash-off time of 10 minutes at 20 °C (68 °F) object temperature apply Two-Part HS Performance Filler .



#### **Note**

- ◆ *Pay attention to the drying time of the Two-Part HS Wet-in-Wet Filler at +60 °C (140 °F) object temperature*
- ◆ *60 - 150 µm: 15 - 20 minutes*
- ◆ *150 - 250 µm: 20 - 25 minutes*
- ◆ *For additional information about Two-Part HS Wet-in-Wet Filler , refer to ⇒ ["3.6.3 Two-Part HS Performance Filler"](#), page 120 .*
- ◆ *Alternatively Two-Part HS Wet-in-Wet Filler can also be used. Note the additional information on Two-Part HS Wet-in-Wet Filler . Refer to ⇒ ["3.6.5 Two-Part HS Wet-in-Wet Filler"](#), page 131 .*
- For additional information on Two-Part Wash Primer refer to ⇒ ["3.4.3 Two-Part Wash Primer"](#), page 100 .
- Lightly dry-sand the filler with sandpaper (P400-P500), making sure not to sand through.
- Then clean using Silicone Remover .
- Tape off the adhesive surface on the window glass flange using suitable heat-resistant and solvent-resistant adhesive tape. This prevents adhesive residue.
- If necessary, paint the window opening in the vehicle color.
- To prevent sharp edges, remove the adhesive tape from the window glass flange after the last spray application.



#### **Note**

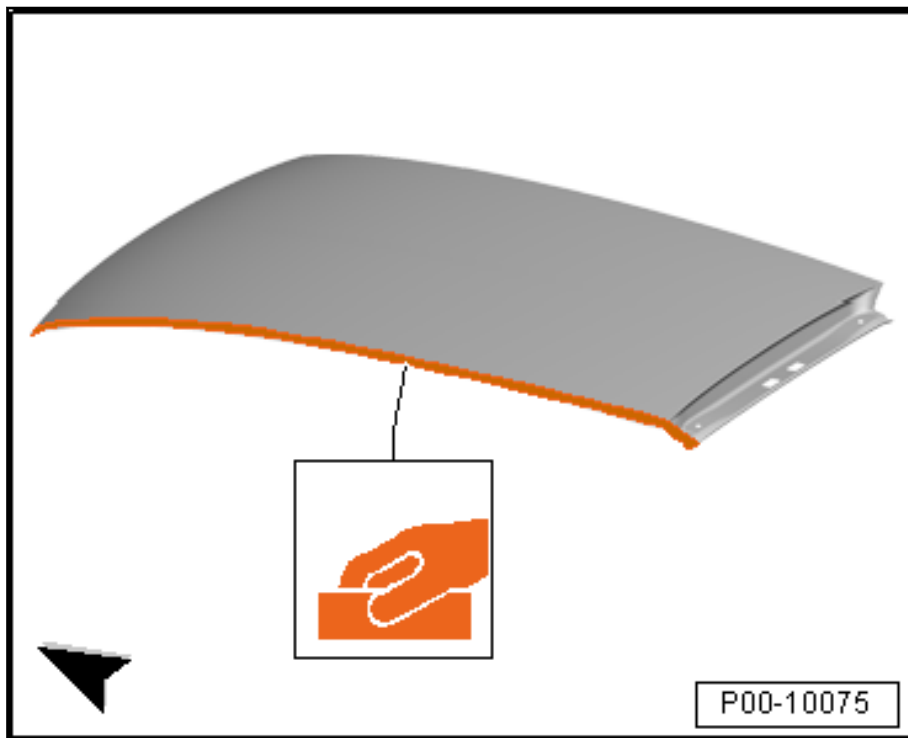
*Apply glass/paint primer for the window adhesive using the Applicator - D 009 500 25- .*

- Install the windshield. Refer to ⇒ Body Exterior; Rep. Gr. 64 ; Windshield; Windshield, Removing and Installing .
- Install the rear window. Refer to ⇒ Body Exterior; Rep. Gr. 64 ; Rear Window; Rear Window, Removing and Installing .



## 2.7 Adhesive Surface Pretreatment when Replacing Laser-Soldered Roofs

- Dry sand the cataphoretic dip coating (CDC) primer on the roof adhesive surface down to the bare metal using P 180 sandpaper.



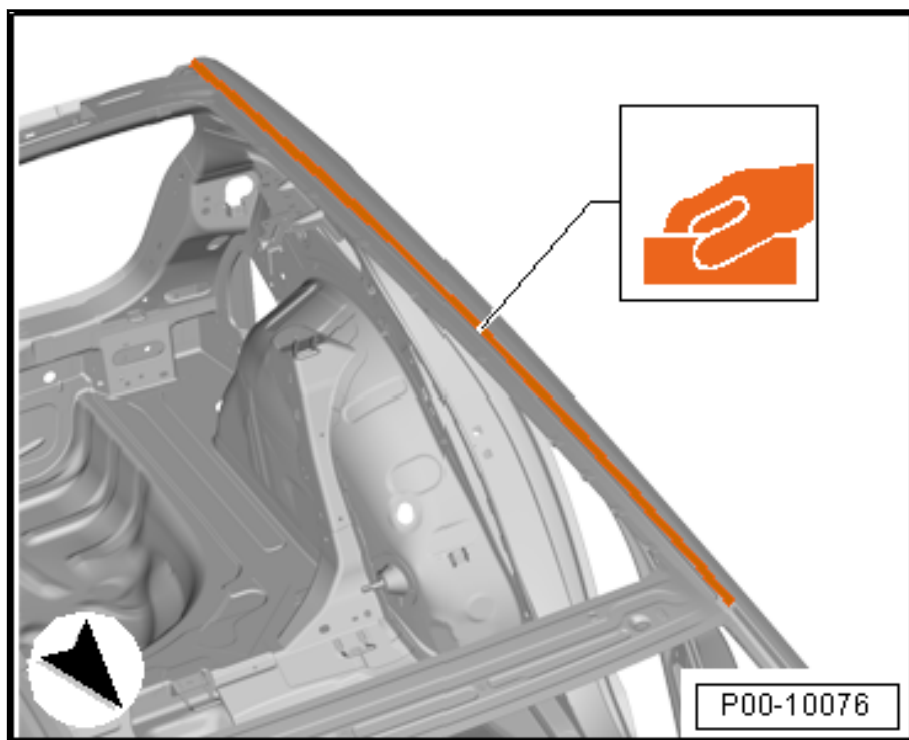
- Dry sand the roof pillar adhesive surface down to the bare metal using P 180 sandpaper.



### Note

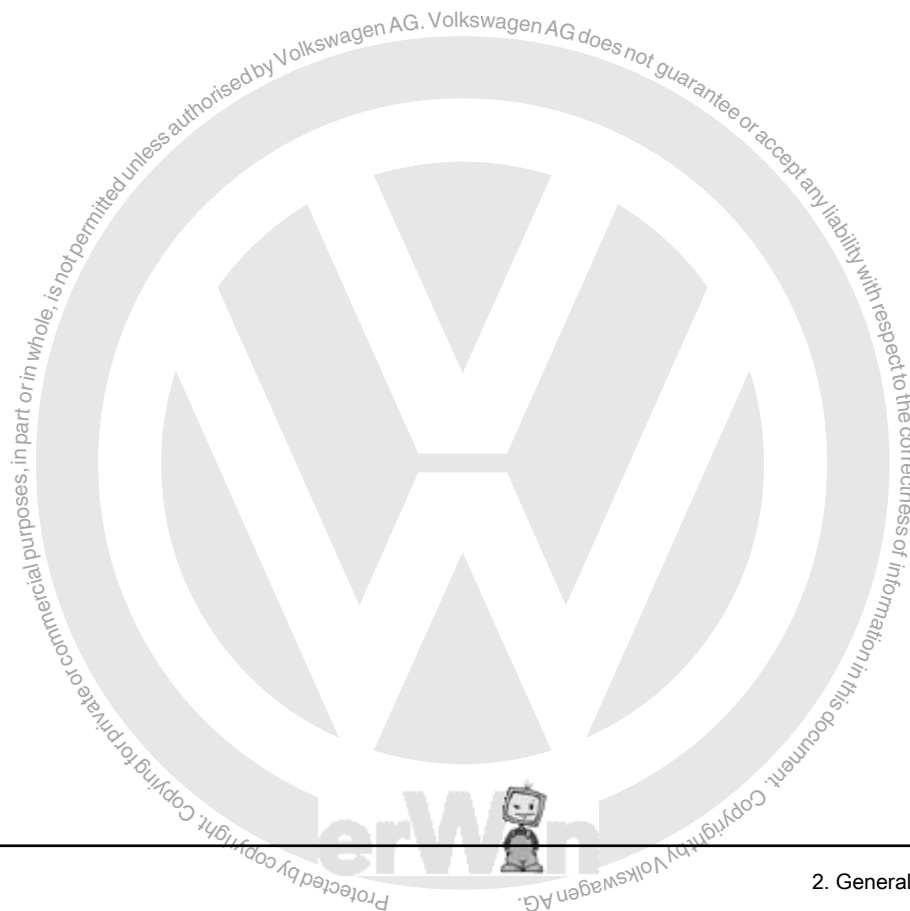
*Prime the sanded-through areas outside of the body adhesives with Two-Part Wash Primer - LHV 043 000 A2- and then fill with Two-Part HS Performance Filler .*





- Clean the adhesive surface with silicone remover.
- Replace the roof. Refer to ➔ Body Repair; Rep. Gr. 51 .

**Overview detailed view of the body adhesive**





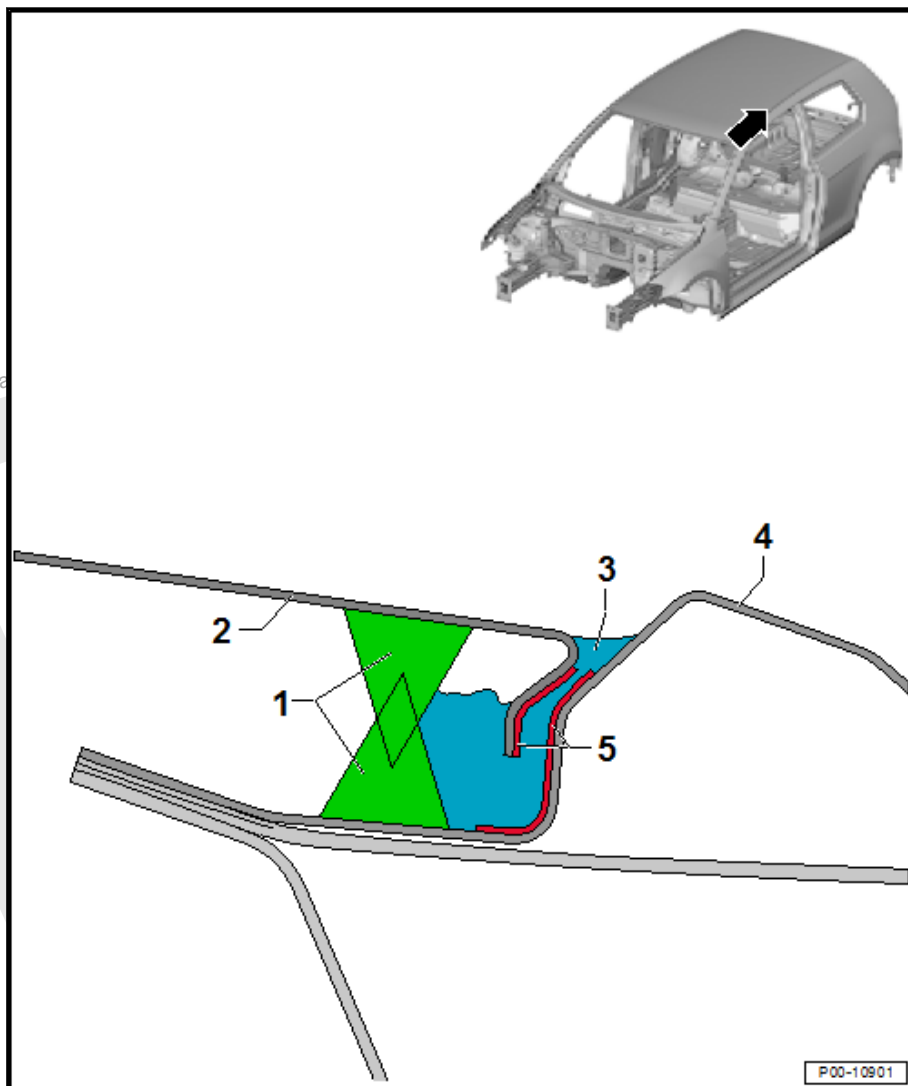
**1 - One-Part Assembly Adhesive - D 190 MKD A3-**

**2 - Roof**

**3 - Two-Part Body Adhesive - D 180 003 M2- or Two-Part Body Adhesive - D 180 004 M2-**

**4 - Roof Pillar/Side Panel**

**5 - Sanded-Down Bare Metal Area**

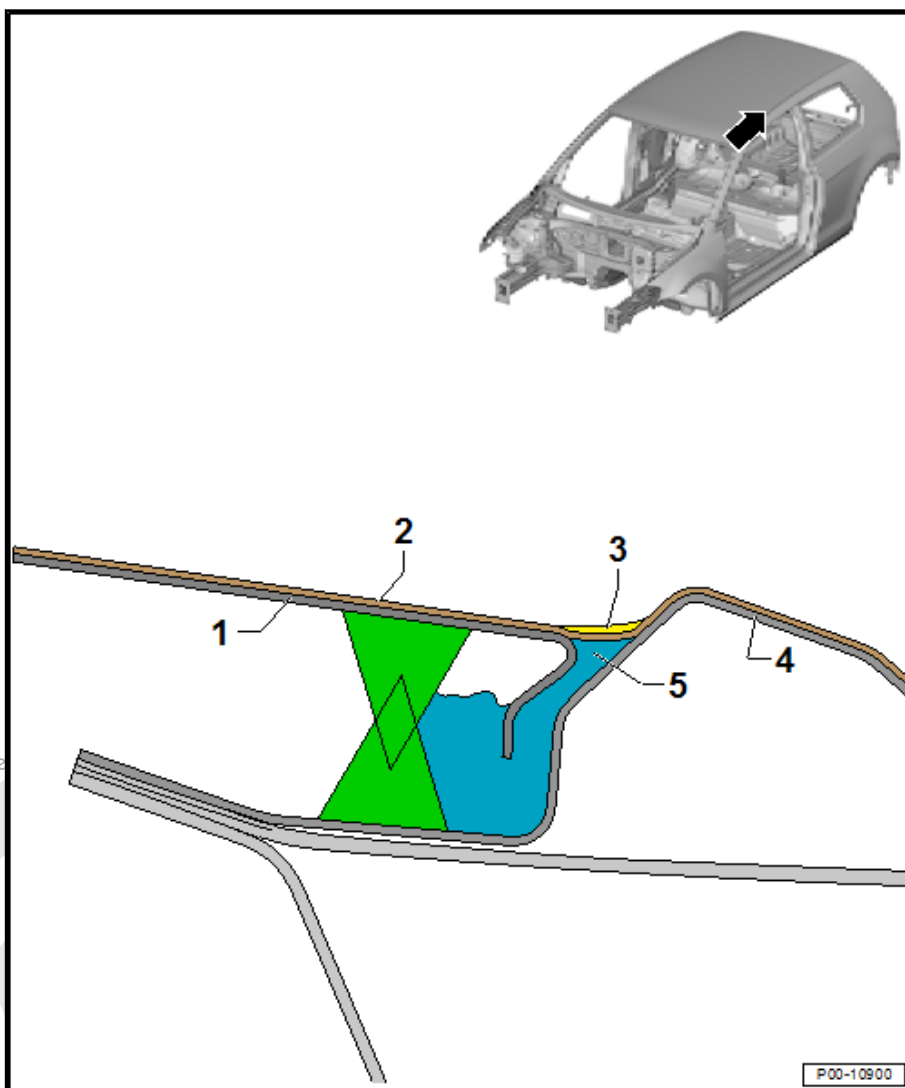


**Detailed view of the application of filler and fine seam sealant**



## 1 - Roof

## 2 - Two-Part HS Performance Filler



### Note

*Prime the areas that have been sanded through with Two-Part Wash Primer - LHV 043 000 A2- before applying filler.*

## 3 - Fine Seam Sealing



### Note

*The sealing material cannot be applied on blank sheet metal, but rather on filled surfaces.*

## 4 - Roof Pillar/Side Panel

## 5 - Two-Part Body Adhesive - D 180 003 M2- or Two-Part Body Adhesive - D 180 004 M2-

Recreate the subsequent paint system according to the manufacturer's specifications.



## 2.8 Fender Corrosion Protection in Wheel Housing Liner Contact Area



### Note

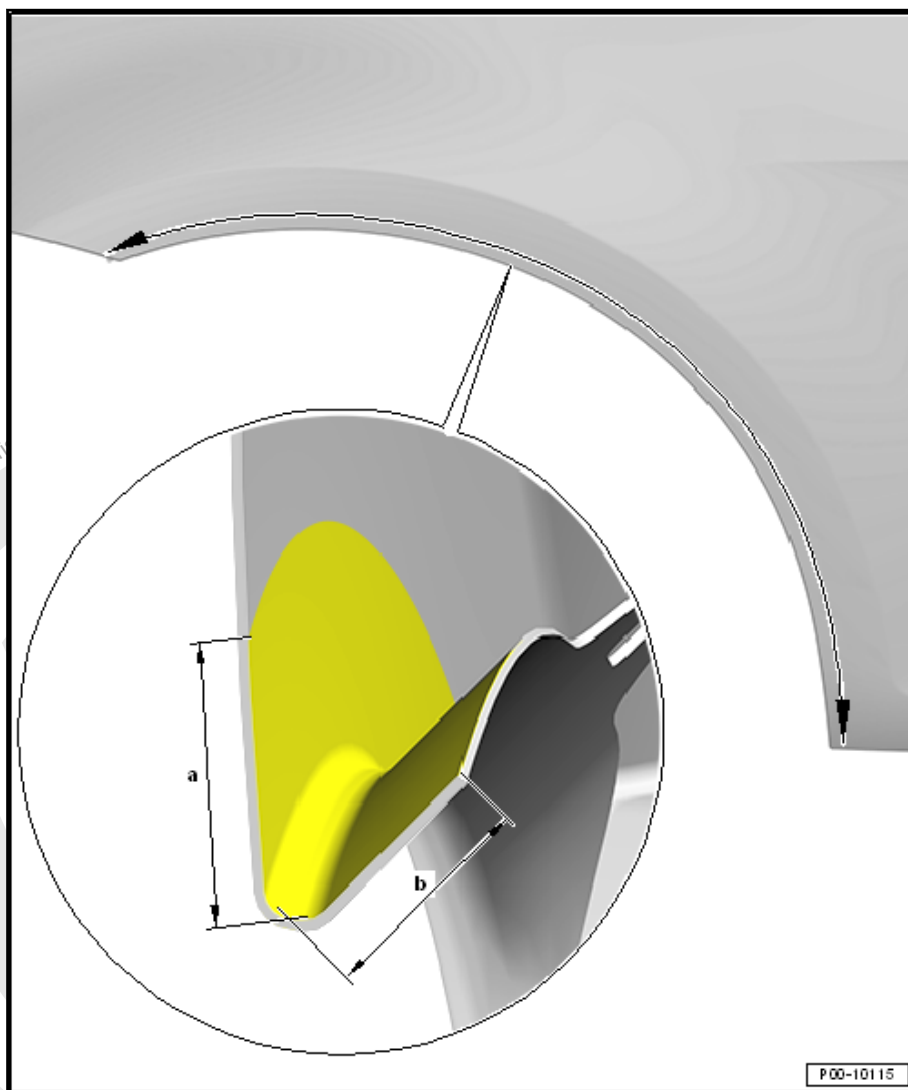
- ◆ *The corrosion protection in the fender seam must be applied on all replacement parts, on which the attached seal is not already present.*
- ◆ *The additional corrosion protection seal will prevent "chafe marks" in the fender wheel housing liner.*
- Apply the filler to the interior and exterior areas of the fender.
- Once the filler has dried, apply and spread the Sealing Material - D 511 500 A2- in the wheel housing liner contact area (fender seam).

Maß a - 20 mm

- Height of the seal

Maß b - 10 mm

- Width of the seal



### Note

*The -dimension b- can vary, because the fender has different folded edge widths. Note that the entire folded edge is always sealed.*



Before installing, the inner sides of the wheel housing and the fillet plate are to be sealed with cavity sealant.

**Product information:**

- ◆ Refer to ➤ [“3.11 Preservation”, page 269](#)

## 2.9 Fold Corrosion Servicing Notes

**Corrosion on the fold edges, for instance on the hood, door or also the rear lid**

- Remove the corroded areas with Refer to ➤ [“4.1.6 Pneumatic Brush Grinder Set VAS 6446A”, page 386](#) or Refer to ➤ [“4.1.7 Brush Grinder Set VAS 6776”, page 387](#).
- Sand the overlapping areas with P360 - P400 sandpaper.
- Clean the base surface with Silicone Remover.
- After a corrosion repair and before sealing, insulate the base surface with Two-Part Wash Primer - LHV 043 000 A2- and then fill with Two-Part HS Performance Filler.
- After the filler has dried, the filled area must be dry sanded with P400- P500. While doing so, make sure to avoid “sanding through”. Then clean the sanded areas with Silicone Remover.
- After the filler has dried and has been sanded, the metal edges in the fold area must be thinly sealed with a fine seam sealant. Refer to ➤ [“3.15 Sealing Materials”, page 296](#). The fine seam sealant must match the original state. Refer to the ➤ »Vehicle-Specific Paint Information«.



**Note**

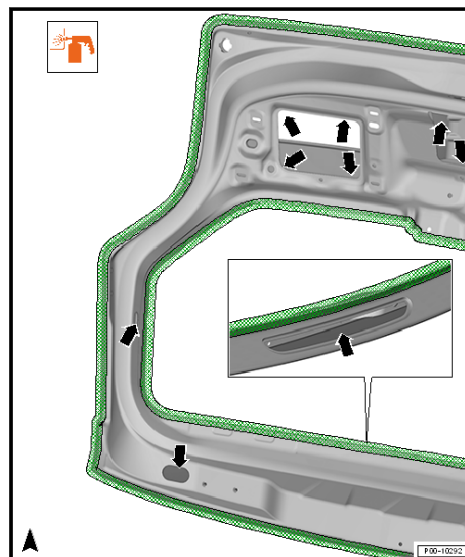
- ◆ *When repairing, the seam sealant is to be returned to replicate stock visual appearance and layer thickness.*
- ◆ *Sealing seams near attachments to be installed must be applied smoothly in order to avoid damage and malfunctions.*
- ◆ *Water drain holes must stay clear.*
- ◆ *All threaded pins and weld nuts with M-threads, as well as all other pins and contact surfaces for the assembly must be functional after the sealant application.*
- ◆ *The sealing material cannot be applied on blank sheet metal, but rather on filled surfaces.*
- Recreate the subsequent paint system according to the manufacturer's specifications.
- Seal the cavities around the fold area. Refer to ➤ [“4.1.8 Suction Feed Spray Gun V.A.G 1538”, page 388](#) and Refer to ➤ [“3.11 Preservation”, page 269](#).



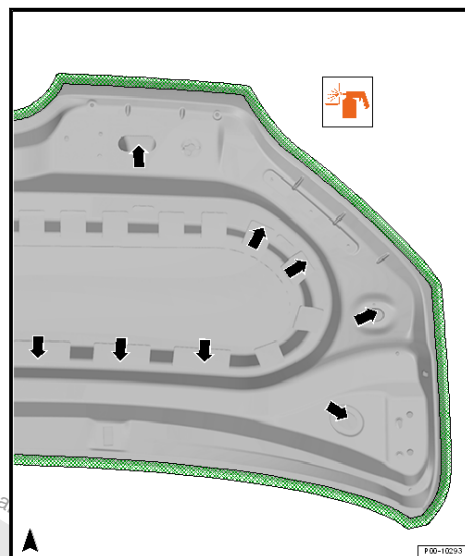
#### Note

*Service work is effective only when the fold area can be sealed airtight from the inside (so that no moisture can get in).*

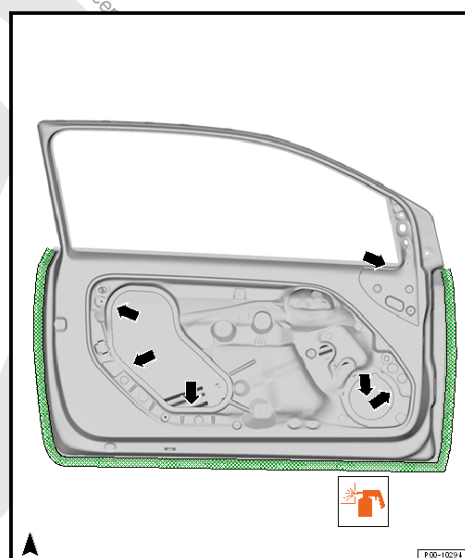
#### Cavity sealant area example on rear lid



#### Cavity sealant area example on hood



#### Cavity sealant area example on a door





## 2.10 Corrosion Protection for Body, Attached and Welded Parts

The warranty claims cannot be made valid, if:

- ◆ Damage to body and paint is not properly eliminated in time according to manufacturer specifications.
- ◆ Rust damage is caused by not using original replacement parts and original materials during body repair and/or not treating according to manufacturer specifications.
- ◆ Paint errors occur due to the fault of the technician (lack of care) or collision damage that was not correctly repaired according to manufacturer specifications.

### Fenders

- ◆ The fender must be completely coated from the inside. A spray application wet in wet procedure is sufficient.
- ◆ Vehicles with wheel housing liners must receive an additional chafe protection on the wheel housing. Refer to ["2.8 Fender Corrosion Protection in Wheel Housing Liner Contact Area", page 18](#) . As procedure, sealing material has already been applied to the top of the fender.



### Note

*Before installing, the inner sides of the wheel housing and the fillet plate are to be sealed with Cavity Sealant - D 330 KD 1 A2-*

### Doors

- ◆ Doors also need to be completely coated from the inside.
- ◆ The inside of the door must be sealed with cavity sealant.

### Covers/Lids

- ◆ To be worked on like fenders and doors.
- ◆ The inside must also be sealed with cavity sealant.

### Ball pins

- ◆ Recreate the paint structure in sanded-through areas near the ball pin.
- ◆ Then paint over the ball pin.

### Welded parts

All welded parts except the roof are to be completely primed and filled on the inside. The visible inner surfaces must be coated with a spray application wet-in-wet processes and clear coat spray application, if necessary perform this before welding.

Bare welded parts or damaged must be coated with Inox spray or zinc spray first. After painting, the cavities must be completely protected with cavity sealant.

When it is required, it is important to perform sealing work after applying the previously mentioned paint to guarantee optimum corrosion protection.

Coat all parts that form cavities, such as pillars, braces, side panels, etc., with cavity sealant. All parts in series production that are coated with noise-damping or stone chip protection material (for example the wheel housing, floor panel, front/rear cross panels or outer side sill) need to be coated as follows:

◆





- ◆ Coat the wheel housings and underbody with spray seam sealant.
- ◆ Construct large gaps or raised layer thicknesses with base material.
- ◆ Sill panel region, lower side panel, rear cross panel corners with stone chip protection

#### Materials

- ◆ Underbody Protection Wax - D 316 D38 A2-

## 2.11 Parking Aid Sensor, Painting

The parking aid sensor may not be covered.

The following parameters must be met when painting to avoid malfunctions in the parking aid sensor (parking aid system):

#### New Part, Painting

- ◆ Maximum coat thickness 125 µm; the coat thickness must always be measured after painting
- ◆ Maximum curing temperature: 1 hour at 90 °C (194 °F)

#### Old Part, Painting

- ◆ Only remove paint (sand) down to the primer
- ◆ The minimum coat thickness of 5 - 10 µm coating must be maintained
- ◆ Maximum coat thickness 125 µm; the coat thickness must always be measured after painting
- ◆ Maximum curing temperature: 1 hour at 90 °C (194 °F)

#### Electric Conductivity

- ◆ Paint or paint spray must not go into the connector; the pin contact must be guaranteed after painting

#### Cleaning

- ◆ Dipping in cleaning solution without taping off the connector pin beforehand is prohibited.

#### Function Test

- ◆ Connect the Vehicle Diagnostic Tester and check the function. Refer to ➔ Electrical Equipment General Information; Rep. Gr. 97 ; Wiring, Vehicle Diagnostic Tester .

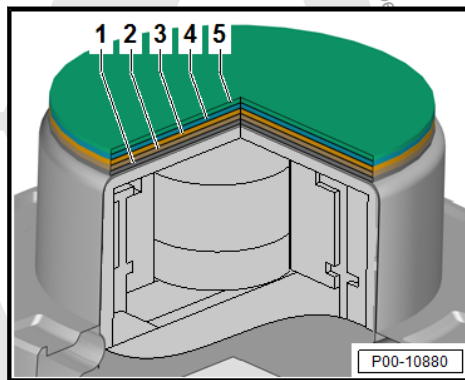
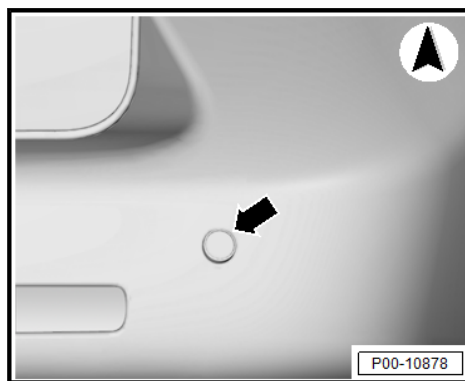
#### Paint Structure and Coat Thickness, Repairing

- 1 - Primed New Part with Replacement Part Primer Coat: 2 - 10 µm
- 2 - Filler: 30 - 40 µm
- 3 - Solid Base Coat: 10 - 20 µm
- 4 - Metallic/Pearlescent Base Coat: 20 - 25 µm
- 5 - Clear Coat: 35 - 50 µm



#### Note

Also pay attention to ➔ Vehicle-Specific Paint Information; Rep. Gr. 00 ; Contrasting Colors .

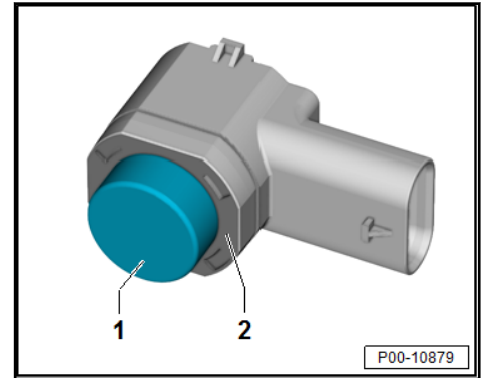






## Paint Area

- 1 - The paint area on the sensor is the front and side surface of the membrane. The side surface is painted a minimum 3 mm to maximum 4 mm from the front side of the membrane toward the rear.
- 2 - No paint is permitted in this area.

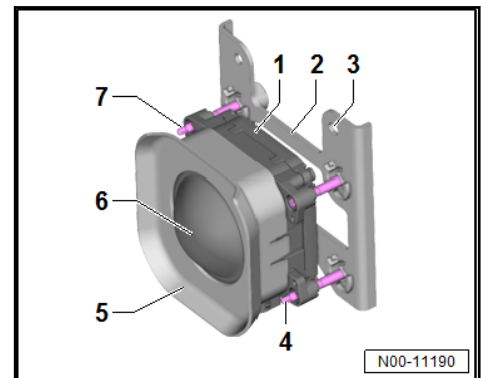


## 2.12 Adaptive Cruise Control (ACC)



### Note

- ◆ On vehicles with ACC, the trim in the right cover section of the front bumper must not be painted if paint repairs or component replacements are performed. The ACC system is located behind this section therefore a coat of paint would destroy its functionality.
- ◆ The cover for the distance regulation sensor in the bumper grille is composed of radar-penetrable material. The cover is heated to avoid functions being restricted from snow or ice.
- ◆ All changes to the surface such as additional painting, bonding and other supplementary applied objects can cause malfunctions.



### Control Module for Adaptive Cruise Control - J428-

The image shows the Control Module for Adaptive Cruise Control - J428- on the Golf. The image can vary on other vehicle models.

- 1 - Adapter Plate
- 2 - Bracket
- 3 - Securing Hole
- 4 - Vertical Adjustment Bolt
- 5 - Trim
- 6 - Distance Regulation Sensor/Distance Regulation Control Module
- 7 - Horizontal Adjustment Bolt



## 2.13 Bumper Cover Painting Instructions in Lane Change Assistance Control Module Area

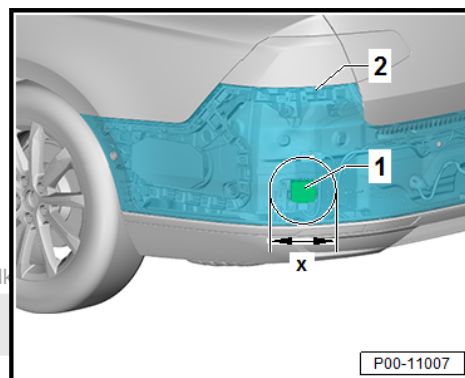
### Bumper cover in the area of the lane change assistance control module

Left side shown the right side is a mirror image depending on the vehicle model and equipment

The area of the lane change assistance control module may not be covered.

To avoid malfunctions of the control module (lane change assistance) -1- pay attention to the following parameter when painting the bumper cover -2-.

- ◆ Do not exceed the maximum paint coat thickness of 150  $\mu\text{m}$  in the area of the control modules (lane change assistance) -1-.
- ◆ A plastic repair may not be performed in this area in a vicinity of minimum dimension -x- = 25 cm.
- ◆ Smoothing work may not be performed in this area in a vicinity of minimum dimension -x- = 25 cm.
- ◆ Triple painting is not permitted on the bumper cover -2-.
- ◆ Before beginning painting check using a grinding pattern in the adjacent area if the bumper cover -2- was already repainted.
- ◆ Spot repair of the area of the control modules (lane change assistance) -1- is not permitted.





### 3 Original Products

- ⇒ ["3.1 Paint Products in Service", page 25](#)
- ⇒ ["3.2 General Application Instructions for Repair and Painting Systems", page 26](#)
- ⇒ ["3.3 Filling Paste", page 73](#)
- ⇒ ["3.4 Primer Metal", page 92](#)
- ⇒ ["3.5 Plastic Primer", page 104](#)
- ⇒ ["3.6 Filler", page 106](#)
- ⇒ ["3.7 Top Coats", page 160](#)
- ⇒ ["3.8 Clear Coats", page 207](#)
- ⇒ ["3.9 Hardener", page 254](#)
- ⇒ ["3.10 Thinners", page 263](#)
- ⇒ ["3.11 Preservation", page 269](#)
- ⇒ ["3.12 Underbody Protection", page 272](#)
- ⇒ ["3.13 Stone Chip Protection", page 284](#)
- ⇒ ["3.14 Wax Underbody Protection", page 291](#)
- ⇒ ["3.15 Sealing Materials", page 296](#)
- ⇒ ["3.16 Cleaning Agent", page 304](#)
- ⇒ ["3.17 SprayMax System", page 310](#)
- ⇒ ["3.18 Additional Materials", page 366](#)

#### 3.1 Paint Products in Service



##### Note

- ◆ *For guarantee and warranty work, Volkswagen AG advises to use only original Volkswagen products (refer to <sup>1)</sup>) or paint supplier products that are approved by the manufacturer according to manufacturer specifications. Only these products fulfill the requirements that are necessary to maintain the paint warranty.*
- ◆ *Place these warranty claims (via the importer) on the respective suppliers of the paint materials, for paint complaints regarding manufacturer approved products from the paint suppliers performed painting.*

1) Only use original Volkswagen products in Germany.



## 3.2 General Application Instructions for Repair and Painting Systems

⇒ [“3.2.1 Aqua Premium Application Instructions for Water-Soluble Products”, page 26](#)

⇒ [“3.2.2 Gloss Level Adjustment of HS Clear Coat and HS Top Coat with Matting Component”, page 29](#)

⇒ [“3.2.3 Gloss Level Adjustment of Two-Part HS Clear Coat with Two-Part Clear Coat, Matte”, page 37](#)

⇒ [“3.2.4 Repair Paint System for Matte Painted Vehicles”, page 39](#)

⇒ [“3.2.5 Paint System for Plastic Parts”, page 43](#)

⇒ [“3.2.6 Aqua Premium System, Touch-Up System for Two Layer Colors”, page 50](#)

⇒ [“3.2.7 Aqua Premium System, Touch-Up System for Three Layer Effect Colors”, page 56](#)

⇒ [“3.2.8 Aqua-Premium-System, Product Preparation for Preparation”, page 63](#)

⇒ [“3.2.9 Aquaplast Design and Multi-Color Paintwork”, page 68](#)

⇒ [“3.2.10 Processing Notes for Paint with Restricted Covering Capacity”, page 72](#)

### 3.2.1 Aqua Premium Application Instructions for Water-Soluble Products



Edition 02/2018

When working with water-soluble products, pretreat the base surface very carefully and only with water-soluble products and the recommended processing materials.

#### Base surface

Pre-treatment of base surfaces:

- ◆ Clean the metallic base surfaces preferably with Nitro Thinner - LVE 856 000 A3- .
- ◆ The sanded filler surfaces and old paint must be cleaned with Silicone Remover - LSW 019 000 A2- .
- ◆ Plastic surfaces must first be thoroughly pretreated according to Refer to ⇒ [“3.2.5 Paint System for Plastic Parts”, page 43](#) and before they are further processed, cleaned again with the Silicone Remover - LSW 019 000 A2- .

#### Masking work

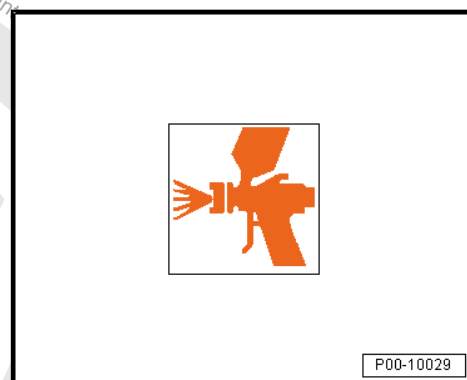
Use only commercially available water-resistant masking tape and water-resistant, adhesive masking paper or plastic protective films.



## Spray guns/spraying systems

Suitable spray gun: spray pressure 1.8 to 2.0 bar (26.11 to 29.01 psi) initial pressure.

- Washer nozzle, adjustment (refer to the manufacturer tolerances): “Devilbiss GTI-Pro T110” 1.2 mm (standard).
- Washer nozzle, adjustment (refer to the manufacturer tolerances): “Devilbiss GTI-Pro Lite TE20” 1.2 mm (standard).
- Washer nozzle, adjustment (refer to the manufacturer tolerances): “Devilbiss GTI-Pro T1” 1.2 mm (standard).
- Washer nozzle, adjustment (refer to the manufacturer tolerances): “Devilbiss GTI-Pro T2” 1.2 mm (standard).
- Washer nozzle, adjustment (refer to the manufacturer tolerances): “IWATA WS 400 EVOTECH 1.3 OBS” (standard).
- Washer nozzle, adjustment (refer to the manufacturer tolerances): “IWATA W 400 WB2 1.2 / 1.2W” (standard).
- Washer nozzle, adjustment (refer to the manufacturer tolerances): “SATA RP 3000 1.2” (standard).
- Washer nozzle, adjustment (refer to the manufacturer tolerances): “SATA RP 4000 1.2 / RP 1.2W” / “SATA RP 5000 1.2 / RP 1.2W” (standard).



### Note

*Switching between using water-soluble and conventional products with a single spray gun/spraying system is not advised. Spray guns/spraying systems for processing water-soluble products must be made of corrosion-resistant materials (stainless steel, plastic).*

## Mixing/adjusting containers

Only plastic containers or inner-coated tin containers may be used for mixing or viscosity adjustment of water-soluble products.

## Material temperature

Since the viscosity and the processing characteristics of water-soluble products are dependent on the material temperature, ensure that the water-soluble products have a temperature of +18 °C to +35 °C (64.4 °F to 95 °F) at the time they are processed/adjusted.

## Processing

Processing water-soluble products is extensively influenced through temperature and humidity. The influence can vary from a restriction to a suspension of the application when the certain requirements are not given or met. In the processing window for water-soluble products the cornerstones/corner points are determined.

For optimal processing when in different climatic conditions and for different object sizes, the following climate chart gives recommendations for using Additive for Aqua Premium - LVM 035 200 A3- or Additive for Aqua Premium - LVM 035 301 A3- .

## Climate Chart

- ◆ Use the climate chart to select the correct additives for the Aqua-Premium .
- ◆ Pay attention to the size of the repair area.



- ◆ The size of the repair can require a longer adjustment
- ◆ Read out the booth temperature in paint mode
- ◆ Check the relative humidity in the booth using a hygrometer



#### Note

- ◆ *Only on metal and pearlescent colors at a relative humidity of 65 % 30 % Additive for Aqua-Premium - LVM 035 200- can be added.*
- ◆ *For smaller or medium repairs and a humidity between 30 - 70 % use the standard Additive for Aqua-Premium - LVM 035 200- .*
- ◆ *At a lower humidity under 30 % and larger repairs use the longer Additive for Aqua-Premium - LVM 035 301- . It is also suitable at higher temperature in combination with medium or lower humidity and is also helpful on large surfaces with lower humidity, depending on the temperature.*
- ◆ *Purified Water - LVW 010 000- can be added at very low humidity combined with higher temperature.*
- ◆ *Purified Water - LVW 010 000- is also helpful on large surface and lower humidity, depending on the temperature.*

°C in the booth	Relative humidity in %	0 to 30 %	31 to 42 %	31 to 64 %	43 to 64 %	65 to 90 %
10 to 15 °C (50 to 59 °F)		-	-	-	-	-
15 to 30 °C (59 to 86 °F)		20 % - LVM 035 30Win-dow Glass Flange1-	-	20 % -LVM 035 200-	-	30 % -LVM 035 200-
30 to 55 °C (86 to 131 °F)		20 % -LVM 035 301- / 10 % -LVW 010 000-	20 % -LVM 035 301-	-	20 % -LVM 035 200-	30 % -LVM 035 200-

#### Characteristics for standard Additive - LVM 035 200- .

- ◆ Adding of 30 % on metallic and pearlescent color shades, at a relative humidity over 65 %.
- ◆ Suitable for small or medium humidity and a humidity between 30-70 %.

#### Characteristics for Additive - LVM 035 301- , long

- ◆ Suitable for larger repair and a lower humidity under 30 %
- ◆ Suitable at higher temperature in combination with a middle to low humidity.
- ◆ Suitable on large surfaces and low humidity, depending on temperature.

#### Characteristics for Purified Water - LVW 010 000-

- ◆ Adding at a very high humidity in combination with a high temperature.
- ◆ Suitable on large surfaces and low humidity, depending on temperature.





#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application



P00-10820

### 3.2.2 Gloss Level Adjustment of HS Clear Coat and HS Top Coat with Matting Component

Edition 05/2016

Adjusting the varying gloss grades of HS clear coat and HS top coat by mixing Matting Component - LVM 769 810 A2- for plastic and metal surfaces

The reference material that addresses the factors that affect gloss grade in these instructions, will help the processor to achieve the desired gloss grade, even with differing operating conditions.

#### Area of application

- ◆ Small- and attachment parts

#### Applicable products

- ◆ Matting Component - LVM 769 810 A2-
- ◆ Two-Part HS Clear Coat - L2K 769 500 A5-
- ◆ Two-Part HS Brilliant Plus Clear Coat - LZK 769 K05 A5-
- ◆ Two-Part HS Vario Clear Coat - L2K 769 K01 A5-
- ◆ Two-Part HS Performance Clear Coat - LZK 769 K06 A5-
- ◆ Two-Part HS Optimum Plus Clear Coat - LZK 769 K07 A5-
- ◆ Two-Part HS Mixed Paint/Top Coat - L2K 074/073...-
- ◆ Two-Part HS Hardener, Long - LHA 009 047 A3-
- ◆ Two-Part HS Hardener, Extra Long - LHA 009 048 A3-
- ◆ Two-Part VHS Hardener, Long - LHA 009 052...-
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-
- ◆ Two-Part Thinner - LVE 009 001 A5-
- ◆ Two-Part Thinner, Special - LVM 009 200 ...-
- ◆ Two-Part Thinner, Long - LVM 009 300 A2-
- ◆ Clear Coat Additive - LVM 007 000 A2-

#### Gloss Level Adjustment/Matting

System information. Refer to ➤ [“3.2.4 Repair Paint System for Matte Painted Vehicles”, page 39](#) .

Technical application information. Refer to ➤ [“3.18.2 Matting Component LVM 769 810 A2”, page 371](#) .



Apart from color-dependent differences, the actual gloss level is influenced by different factors.

The addition of other hardeners not mentioned in these instructions is generally possible, but can result in different application types, drying conditions and layer thicknesses which leads to different gloss levels (up to 20%).

higher gloss level	lower gloss level
shorter hardener	longer hardener
shorter thinner	longer thinner
higher processing viscosity	lower processing viscosity
higher dry layer thickness	lower dry layer thickness
shorter flash-off time	longer flash-off time
forced drying	air drying



#### Note

*It is absolutely necessary to test on sheet metal in order to achieve the appropriate gloss level for the vehicle. Gloss level measurements (60° angle) at the adjacent parts can also be helpful.*

#### HS clear coat mixing table

##### Gloss grades

	Matte less than 20 % *	Satin matte less than 40 % *	Satin gloss less than 60 % *	Gloss less than 80 % *
Matting Component - LVM 769 810-	73 g (2.6 oz)	65 g (2.3 oz)	59 g (2.1 oz)	56 g (2 oz)
Two-Part HS Clear Coat - L2K 769 500-	27 g (1 oz)	35 g (1.2 oz)	41 g (1.4 oz)	44 g (1.6 oz)

\* Because these designations are not subject to a standard, the gloss grade values are not binding and can be understood as reference values or market based values.





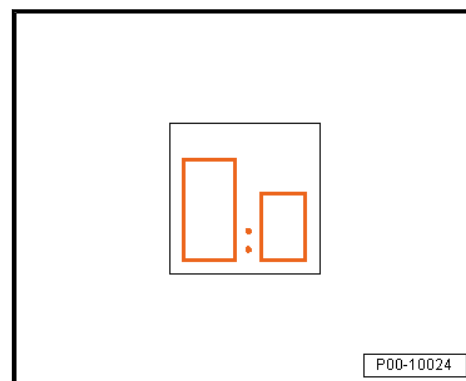
### Mixture with HS hardener

- After mixing the clear coat with the Matting Component - LVM 769 810- , mix this mixture in a 2:1 ratio with HS hardener. Spray ready without the addition of thinner.

### Gloss grades

	Matte less than 20 % *	Satin matte less than 40 % *	Satin gloss less than 60 % *	Gloss less than 80 % *
Matting Component - LVM 769 810-	68 g (2.4 oz)	59 g (2.1 oz)	54 g (1.9 oz)	52 g (1.8 oz)
Two-Part HS Clear Coat - L2K 769 500-	32 g (1.1 oz)	41 g (1.4 oz)	46 g (1.6 oz)	48 g (1.7 oz)

\* Because these designations are not subject to a standard, the gloss grade values are not binding and can be understood as reference values or market based values.



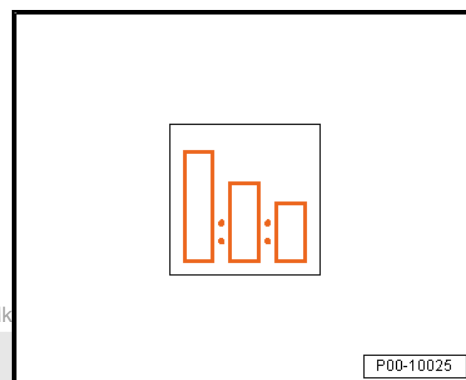
### Mixture with VHS hardener

- After mixing the clear coat with Matting Component - LVM 769 810- , mix this mixture 4:1 by volume with VHS hardener. Spray ready after the addition of 15 % thinner.

### Gloss grades

	Matte less than 20 % *	Satin matte less than 40 % *	Satin gloss less than 60 % *	Gloss less than 80 % *
Matting Component - LVM 769 810-	72 g (2.5 oz)	66 g (2.3 oz)	59 g (2.1 oz)	53 g (1.9 oz)
Two-Part HS Brilliant Plus Clear Coat - L2K 769 K05-	28 g (1 oz)	34 g (1.2 oz)	41 g (1.4 oz)	47 g (1.7 oz)

\* Because these designations are not subject to a standard, the gloss grade values are not binding and can be understood as reference values or market based values.





### Mixture with VHS hardener

- After mixing the clear coat with Matting Component - LVM 769 810- , mix this mixture 4:1 by volume with VHS hardener. Spray ready after adding 5 % Clear Coat Additive - LVM 007 000 A2- .

### Gloss grades

	Matte less than 20 % *	Satin matte less than 40 % *	Satin gloss less than 60 % *	Gloss less than 80 % *
Matting Component - LVM 769 810-	70 g (2.5 oz)	61 g (2.2 oz)	56 g (2 oz)	51 g (1.8 oz)
Two-Part HS Vario Clear Coat - L2K 769 K01-	30 g (1.1 oz)	39 g (1.4 oz)	44 g (1.6 oz)	49 g (1.7 oz)

\* Because these designations are not subject to a standard, the gloss grade values are not binding and can be understood as reference values or market based values.

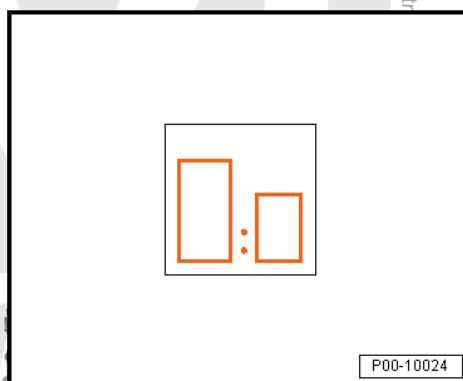
### Mixture with HS hardener

- After mixing the clear coat with Matting Component - LVM 769 810- , mix this mixture 2:1 by volume with VHS hardener. Spray ready without the addition of thinner.

### Gloss grades

	Matte less than 20 % *	Satin matte less than 40 % *	Satin gloss less than 60 % *	Gloss less than 80 % *
Matting Component - LVM 769 810-	68 g (2.4 oz)	60 g (2.1 oz)	55 g (1.9 oz)	51 g (1.8 oz)
Two-Part HS Vario Clear Coat - L2K 769 K01-	32 g (1.1 oz)	40 g (1.4 oz)	45 g (1.6 oz)	49 g (1.7 oz)

\* Because these designations are not subject to a standard, the gloss grade values are not binding and can be understood as reference values or market based values.





### Mixture with VHS hardener

- After mixing the clear coat with Matting Component - LVM 769 810- , mix this mixture 4:1 by volume with VHS hardener. Spray ready after the addition of 15 % thinner.

### Gloss grades

	Matte less than 20 % *	Satin matte less than 40 % *	Satin gloss less than 60 % *	Gloss less than 80 % *
Matting Component - LVM 769 810-	71 g (2.5 oz)	64 g (2.3 oz)	52 g (1.8 oz)	44 g (1.6 oz)
Two-Part HS Performance Clear Coat - L2K 769 K06-	29 g (1 oz)	36 g (1.3 oz)	48 g (1.7 oz)	56 g (2 oz)

\* Because these designations are not subject to a standard, the gloss grade values are not binding and can be understood as reference values or market based values.

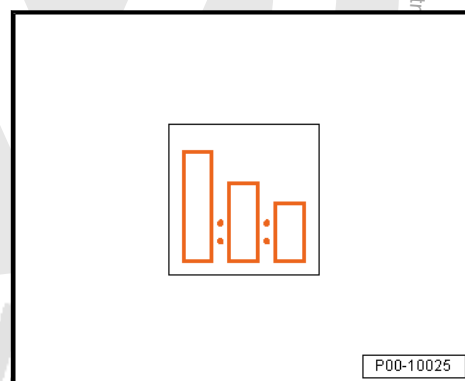
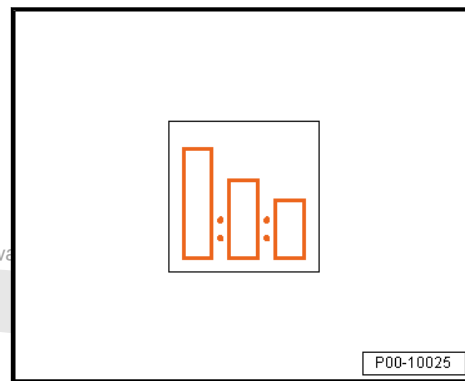
### Mixture with VHS hardener

- After mixing the clear coat with Matting Component - LVM 769 810- , mix this mixture 4:1 by volume with VHS hardener. Spray ready after adding 5 % Clear Coat Additive - LVM 007 000 A2- .

### Gloss grades

	Matte less than 20 % *	Satin matte less than 40 % *	Satin gloss less than 60 % *	Gloss less than 80 % *
Matting Component - LVM 769 810-	71 g (2.5 oz)	65 g (2.3 oz)	58 g (2 oz)	41 g (1.4 oz)
Two-Part HS Optimum Plus Clear Coat - L2K 769 K07-	29 g (1 oz)	35 g (1.2 oz)	42 g (1.5 oz)	59 g (2.1 oz)

\* Because these designations are not subject to a standard, the gloss grade values are not binding and can be understood as reference values or market based values.





### Mixture with VHS hardener

- After mixing the clear coat with Matting Component - LVM 769 810- , mix this mixture 4:1 by volume with VHS hardener. Spray ready after adding 10 % of thinner.

### Gloss grades

	Matte less than 20 % *	Satin matte less than 40 % *	Satin gloss less than 60 % *	Gloss less than 80 % *
Matting Component - LVM 769 810-	65 g (2.3 oz)	57 g (2 oz)	50 g (1.8 oz)	44 g (1.6 oz)
Two-Part HS Mixed Paint White - L2K 074 ...-	35 g (1.2 oz)	43 g (1.5 oz)	50 g (1.8 oz)	56 g (2 oz)

\* Because these designations are not subject to a standard, the gloss grade values are not binding and can be understood as reference values or market based values.

### Mixture with VHS hardener

- After mixing Matting Component - LVM 769 810- with HS top coat, mix this mixture 4:1 by volume with VHS hardener. Spray ready after the addition of 15 % thinner.

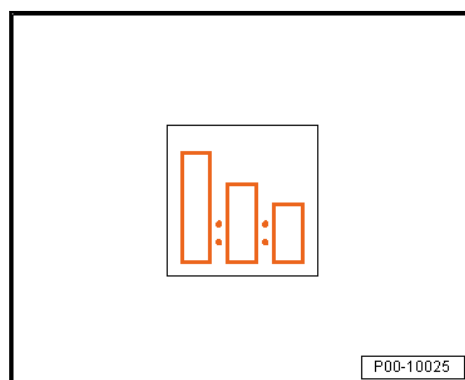
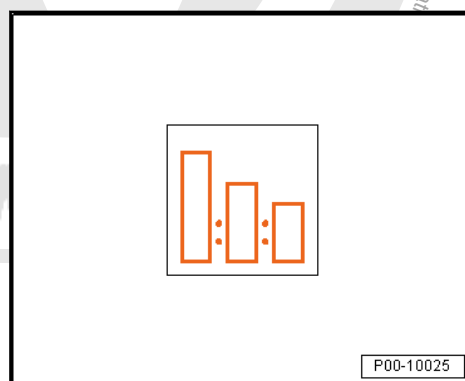
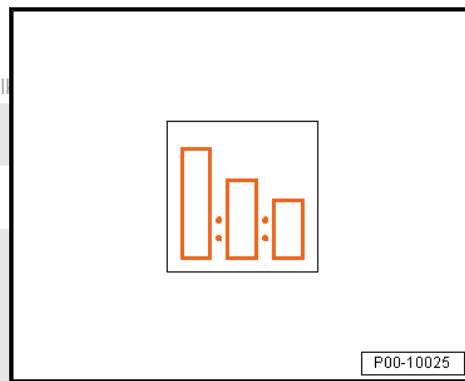
### Gloss grades

	Matte less than 20 % *	Satin matte less than 40 % *	Satin gloss less than 60 % *	Gloss less than 80 % *
Matting Component - LVM 769 810-	71 g (2.5 oz)	58 g (2 oz)	51 g (1.8 oz)	31 g (1.1 oz)
Two-Part HS Mixed Paint Black - L2K 074 ...-	29 g (1 oz)	42 g (1.5 oz)	49 g (1.7 oz)	69 g (2.4 oz)

\* Because these designations are not subject to a standard, the gloss grade values are not binding and can be understood as reference values or market based values.

### Mixture with VHS hardener

- After mixing Matting Component - LVM 769 810- with HS top coat, mix this mixture 4:1 by volume with VHS hardener. Spray ready after the addition of 15 % thinner.





## Processing

### Application type "coat"

- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211

Working viscosity 4 mm gravity feed spray gun "Compliant" and "HVLP"

DIN 4 mm: 16-20 seconds

- Adding thinner at +20 °C (68 °F) material temperature: depending on the product used.



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P00-10032



P00-10036



P00-10023



- Set the spray nozzle (see manufacturer's information):  
"Compliant" 1.3 to 1.4 mm.
- Set the spray nozzle (see manufacturer's information):  
"HVLP" 1.3 to 1.4 mm.
- Set the spray pressure (see manufacturer's information):  
"Compliant" to 2.0 to 2.5 bar (29.01 to 36.26 psi).
- Set the atomizing pressure (see manufacturer's information):  
"HVLP" 0.7 bar (10.15 psi).

- Apply in two spray applications with a 5 to 10 minute intermediate flash-off time. The first spray application is applied lightly, but completely. (Follow the processing instructions).

The recommended dry layer thickness is between 60 and 80 µm.

### Application Instructions

To achieve the best possible and homogeneous matte effect, pay attention to the following notes for the application:

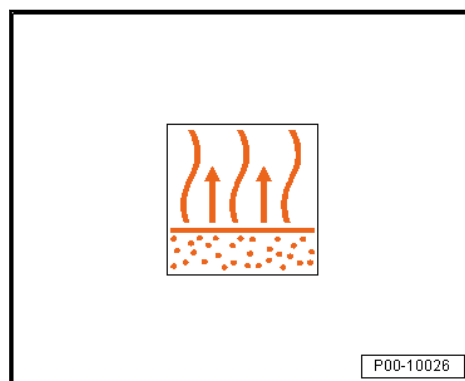
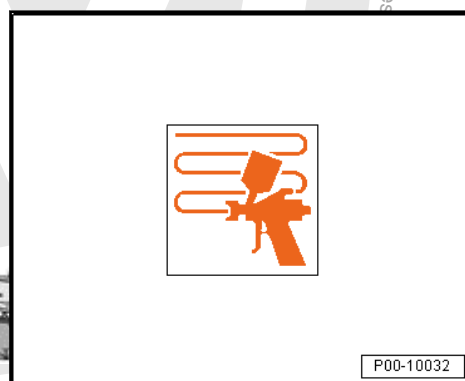
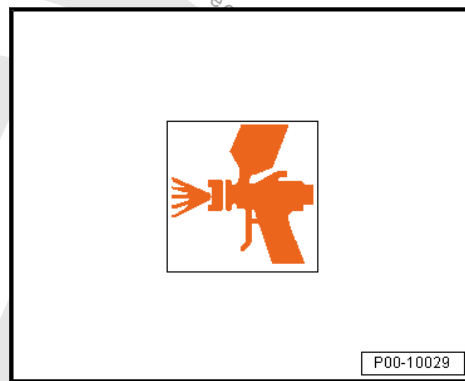


#### Note

- ◆ *The spraying distance to the object is larger than the standard application, to use the full the atomization of the spray pattern. (To prevent streaking)*
- ◆ *Pay attention that there is even overlap of the "spray passes" and that enough wet spray film is applied. There is a risk of cloudiness from too dry of application due to uneven drying or due to unabsorbed spray mist.*
- ◆ *For less opaque colors, it may be necessary to apply another spray application after the corresponding flash-off time.*
- ◆ *A touch-up/repair of the matted clear coat within the surface (for example, side part or clever repair) is not possible.*

### Drying

- Final flash-off time with forced drying is 15 to 20 minutes.





- Forced drying at +60 to 65 °C (140 to 149 °F) object temperature is 45 minutes.



#### Note

- ◆ *The addition of Two-Part Elastic Additive - ALZ 011 001- is omitted.*
- ◆ *Stir or shake the Matting Component - LVM 769 810 A2- in the can well. Mix with HS clear coat and HS top coat according to specification and infuse with hardener and thinner just before processing.*
- ◆ *The processing of the ready-to spray mixture should immediately follow. If the mixture remains in the mixing- or spray gun receptacle for a longer period of time (15 minutes), it should be stirred again before continuing to use (separation).*
- ◆ *Adding Matting Component - LVM 769 810 A2- can influence the covering capacity.*
- ◆ *Dust inclusions cannot be polished out, so therefore ensure that absolute cleanliness is maintained during the entire painting process.*

#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application



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### 3.2.3 Gloss Level Adjustment of Two-Part HS Clear Coat with Two-Part Clear Coat, Matte

Edition 05/2016

Adjusting the different gloss grades of two-part HS clear coat by mixing with Two-Part HS Clear Coat Matte - L2K 769 020 A2- for plastic base surfaces.

The reference material that addresses the factors that affect gloss grade in these instructions, will help the processor to achieve the desired gloss grade, even with differing operating conditions.

The addition of other hardeners not mentioned in these instructions is generally possible, but can result in different gloss grades.

#### Applicable products

- ◆ Two-Part HS Clear Coat - L2K 769 500 A5-
- ◆ Two-Part HS Clear Coat Matte - L2K 769 020 A2-
- ◆ Two-Part HS Vario Clear Coat - L2K 769 K01 A5-
- ◆ Two-Part HS Hardener - LHA 009 041 A3-





- ◆ Two-Part HS Hardener, Long - LHA 009 047 A3-
- ◆ Two-Part VHS Hardener - LHA/LVM 009 051...-
- ◆ Two-Part VHS Hardener, Long - LHA 009 052...-

### Gloss Level Adjustment

The actual gloss grade attained is affected by different factors.

Using different hardeners, thinners, application types, drying conditions and layer thicknesses lead to different gloss levels (up to 20%).

In the following comparison, various parameters and their effects on the gloss grades are represented.

higher gloss level	lower gloss level
hardener with higher solid content.	hardener with lower solid content.
shorter hardener	longer hardener
shorter thinner	longer thinner
higher processing viscosity	lower processing viscosity
higher dry layer thickness	lower dry layer thickness
shorter flash-off time	longer flash-off time
forced drying	air drying

### HS clear coat mixing table

#### Gloss grades

Gloss grade = 1 application

	Satin matte 40 units *	Semi gloss 60 units *	Hardener mixing ratio
Two-Part HS Clear Coat Matte - L2K 769 020 A2-	900 g (31.7 oz)	850 g (30 oz)	2:1 by volume with HS hardener (spray ready)
Two-Part HS Vario Clear Coat - L2K 769 K01 A5-	100 g (3.5 oz)	150 g (5.3 oz)	2:1 by volume with HS hardener (spray ready)

\* Because these designations are not subject to a standard, the gloss grade values are not binding and can be understood as reference values or market based values.

Gloss grade = 1 application

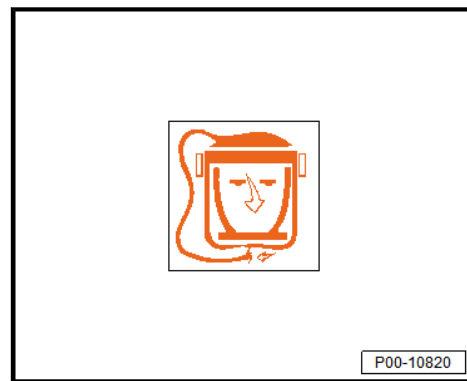
	Satin matte 40 units *	Semi gloss 60 units *	Hardener mixing ratio
Two-Part HS Clear Coat Matte - L2K 769 020 A2-	920 g (32.5 oz)	900 g (31.7 oz)	2:1 by volume with HS hardener (spray ready)
Two-Part HS Clear Coat - L2K 769 500 A5-	80 g (2.8 oz)	100 g (3.5 oz)	2:1 by volume with HS hardener (spray ready)

\* Because these designations are not subject to a standard, the gloss grade values are not binding and can be understood as reference values or market based values.



#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application



### 3.2.4 Repair Paint System for Matte Painted Vehicles

Edition 04/2013

The following describes the repair paint system for matte painted vehicles. Area of application: large surfaces/complete painting

#### Application

- ◆ Metal Surfaces
- ◆ Plastics
- ◆ Partial painting/gloss surfaces
- ◆ Painting of matte paned vehicles

#### Base surface

Suitable base surfaces:

- ◆ Steel Panel
- ◆ Cleaned and sanded, galvanized/electrolytically zincd sheet steel or soft aluminum
- ◆ Sanded factory primer
- ◆ Thoroughly sanded old primer or factory primers (excluding thermoplastic coating)
- ◆ Surfaces prepared with two-part polyester products and then sanded with very fine grit

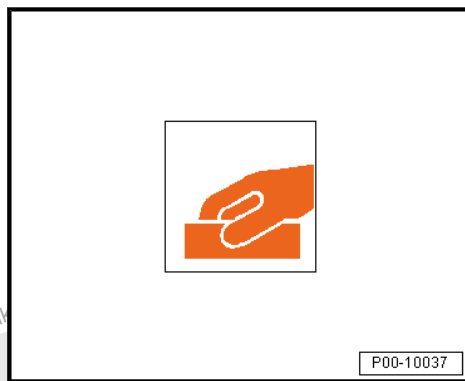
#### Pretreating/cleaning

- Clean carefully using Silicone Remover, Long - LVM 020 100 A5- or Silicone Remover - LVM 020 000 A5- .





- Sand the base surface.



- Use a suitable cleaning agents before reworking to ensure a clean and residue-free surface.

### Approved products

#### Filling Paste:

- ◆ Two-Part Spray Filling Paste - ALN 788 007-
- ◆ Two-Part IR Premium Filling Paste - LSP 787 220-
- ◆ Fine Filling Paste - LSP 784 002 A2-

#### Primer/primer filler:

- ◆ Two-Part Plastic Adhesion Filler, White/Black - LKF 696 009/040 A2-
- ◆ Glazing Bonding Agent - ALO 822 000 10-
- ◆ Two-Part Wash Primer - LHV 043 000 A2-
- ◆ One-Part Wash Prime Light Gray/Dark Gray - LVM 044 007/171 A2-

#### Filler:

- ◆ Two-Part HS Premium Filler - LGF/LVM 013 to A4-
- ◆ Two-Part HS Vario Filler - LGF 786 004 A4-

#### Elastification:

- ◆ Two-Part Elastic Additive - ALZ 011 001- (for all Two-Part HS Filler for plastic parts)

#### Top coat:

- ◆ Two-Part HS Clear Coat - L2K 769 500 A5-

#### Matting

- ◆ Matting Component - LVM 769 810 A2-

Pay attention to the application instructions of the individual original products. Refer to ➔ ["3 Original Products", page 25](#) .

### Mixture/matting and clear coat





- Mix component A + component B Matting Component - LVM 769 810 A2- + Two-Part HS Clear Coat - L2K 769 500 A5- .

Mixture ratio:

Depending on the desired degree of gloss, the Matting Component - LVM 769 810 A2- and Two-Part HS Clear Coat - L2K 769 500 A5- can be mixed in a weight ratio of 75/25 % or 70/30 %.



#### Note

*Stir or shake the Matting Component - LVM 769 810 A2- in the can well. Always mix component A and component B and infuse with hardener and thinner just before processing. The processing of the ready-to spray mixture should immediately follow. If the mixture remains in the mixing or in the spray gun receptacle for a longer period of time (15 minutes), it should be stirred again before continuing to use (separation).*

Adding hardener to component A + B

- 4:1 by volume with Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-

Thinner:

- ◆ Two-Part Thinner, Long - LVM 009 300 A2-

Curing Time:

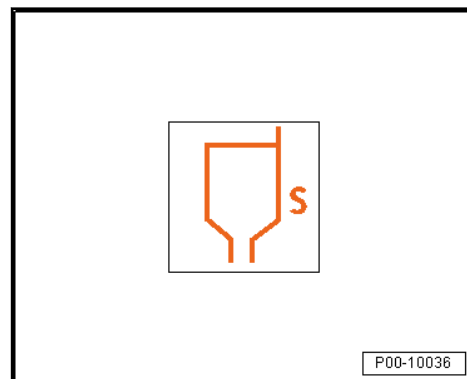
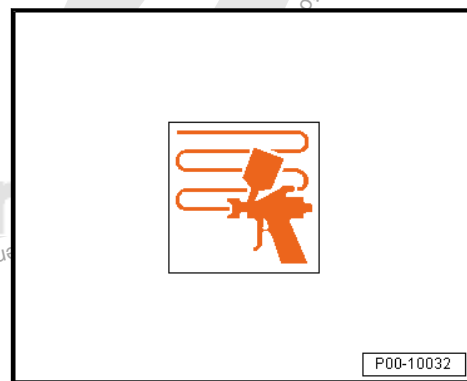
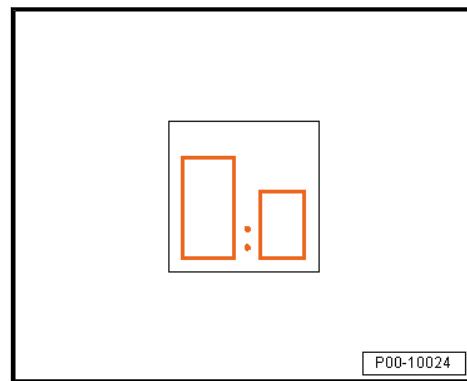
Ready for spraying 60-75 minutes at +20 °C (68 °F).

Application type "coat"

- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211

Working viscosity 4 mm gravity feed spray gun "Compliant" and "HVLP"

DIN 4 mm: 16-20 seconds





- Add 10 % thinner at +20 °C (68 °F) material temperature.
- Set the spray nozzle (see manufacturer's information):  
"HVLP" 1.3 to 1.4 mm.
- Set the spray pressure (see manufacturer's information):  
"Compliant" to 2.0 to 2.5 bar (29.01 to 36.26 psi).
- Set the atomizing pressure (see manufacturer's information):  
"HVLP" 0.7 bar (10.15 psi).
- In two spray applications with 10 to 15 minute intermediate flash-off time.

The recommended dry layer thickness is 70 to 90 µm.

#### Processing:

To achieve the best possible and homogeneous matte effect, pay attention to the following notes for the application:

The spraying distance to the object is larger than the standard application, to use the full the atomization of the spray pattern.  
(To prevent streaking)

If possible, it is also advisable to apply both spray applications in cross coats on horizontal replacement parts, for example the hood.

When applying to large objects such as the hood, the vehicle roof etc., the overlap area of the second spray application must not lay in the overlap zone of the first spray application and should instead be moved.

Pay attention that there is even overlap of the »spray passes« and that enough wet spray film is applied.

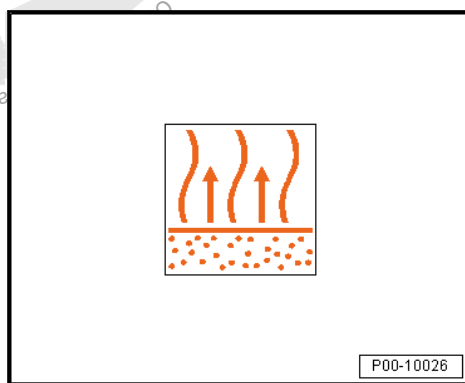
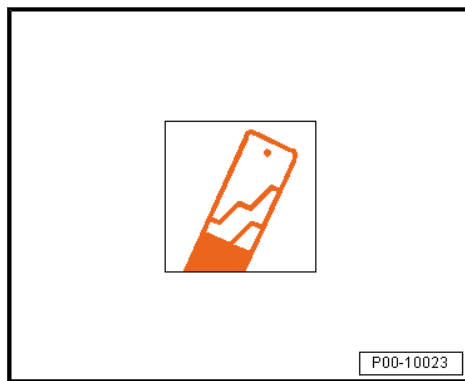
There is a risk of cloudiness from too dry of application due to uneven drying or due to unabsorbed spray mist.

If possible, an entire painting process should be divided up in sections, meaning the vehicle body is separated into attachments, for example the hood, doors etc., and painted in order to prevent overlapping zones and spray mist.

#### Drying:

Forced drying:

- Final flash-off time 15 to 20 minutes.





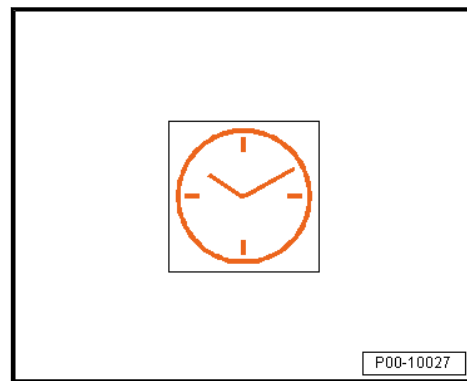
- Drying time 45 minutes at an object temperature of +60 °C (140 °F).

**Air drying is not recommended.**



#### Note

- ◆ *The actual gloss level is influenced by different factors hardener, thinner, application types, drying conditions and layer thicknesses.*
- ◆ *Always follow the recommended material quantities.*
- ◆ *It is absolutely necessary to test the mixtures 75 %/25 % or 70 %/30 % on sheet metal in order to achieve the appropriate gloss level for the vehicle. Intermediate steps are possible.*
- ◆ *Gloss level measurements (60° angle) at adjacent parts can also be helpful.*
- ◆ *A touch-up/repair of the matted clear coat within the surface (for example, side part or clever repair) is not possible.*
- ◆ *Painting large areas (complete painting, roof, hood, sidewall etc.) should not take place at high temperatures (maximum 20 °C (68 °F)).*
- ◆ *Dust inclusions cannot be polished out, so therefore ensure that absolute cleanliness is maintained during the entire painting process.*



#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application



### 3.2.5 Paint System for Plastic Parts

Edition 03/2010

This universal painting system enables the technician to safely and simply paint all plastic parts which can be usually found on the exterior. (Plastic types: PP, EPDM, ABS, PC, PPO, PBTP, UP-GF, PA, PVC, R-TPU, PUR) This technical reference material does not apply to factory primed plastic parts.

#### Base surface

Pretreatment of base surfaces:





- The base surface must be free of separating agents. Before cleaning the plastic parts, temper them for 60 minutes at +60 °C to sweat out the separating agents.
- Clean with the Antistatic Plastic Cleaner - LKR 001 001 A3- or the milder Silicone Remover, Long - LSE 20 100 A3- .

The effort needed for cleaning depends on the type and quantity of the separating agent used. It is recommend to use a sanding pad to support the cleaning process. Let the thinner evaporate (for example, air-drying overnight at room temperature or 30-40 minutes at +60 °C).



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- Before priming, lightly clean again using Antistatic Plastic Cleaner - LKR 001 001 A3- or Silicone Remover, Long - LSE 20 100 A3- .

**The paint structure is not for primed plastic parts.**

Primer:

To attain secure adhesion, plastics must be primed after they have been thoroughly cleaned. Here the user has two choices:

1. - Prime with Two-Part Plastic Adhesion Filler, White - LKF 696 009- or Two-Part Plastic Adhesion Filler, Black - LKF 696 040- . The Two-Part Plastic Adhesion Filler, White - LKF 696 009- and the Two-Part Plastic Adhesion Filler, Black - LKF 696 040- are primer fillers which can be directly painted over with top coat.

2. - Prime with Glazing Bonding Agent - ALO 822 000 10- and rework with elastified two-part HS filler. Further processing with top coat and clear coat.

**Notes for damages:**

- Small scratches can be filled after priming with Two-Part Fine Filling Paste - LSP 784 002 A2- .

- After sanding the filled patches insulate them:

1. - With Two-Part Plastic Adhesion Filler, White - LKF 696 009- or Two-Part Plastic Adhesion Filler, Black - LKF 696 040- .

2. - Prime with Glazing Bonding Agent - ALO 822 000 10- and rework with elastified two-part HS filler. Further processing with top coat and clear coat.

For the application instructions, evaporating and drying times refer to the respective technical application information.

- ◆ Refer to ⇒ [“3.6.4 Two-Part Plastic Adhesive Filler”, page 127](#)
- ◆ Refer to ⇒ [“3.7 Top Coats”, page 160](#)
- ◆ Refer to ⇒ [“3.8 Clear Coats”, page 207](#)

**Using Two-Part Elastic Additive - ALZ 011 001- in two-part HS fillers:**

- ◆ 15 % for rigid and semi-rigid plastics
- ◆ 30 % for highly flexible plastics.

For the application refer to the technical application information of the respective filler. Refer to ⇒ [“3.6 Filler”, page 106](#) .



**Note**

*Painted plastic parts may not be cleaned with a high-pressure cleaner before six weeks have passed. The minimum distance between the nozzle and the object is 30 cm.*

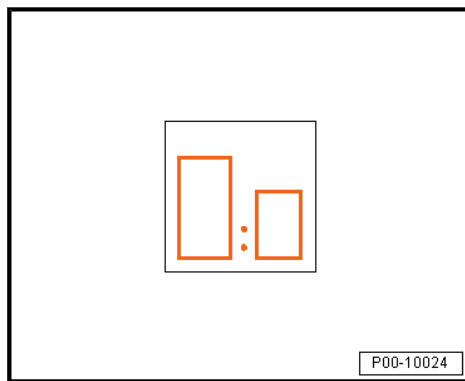
**One-coat painting**

**Top coat:**



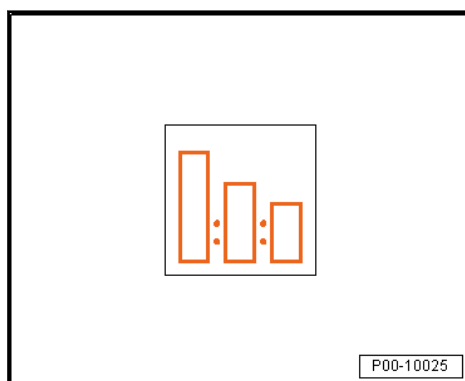


- Mix two-part HS top coat with 15 % Two-Part Elastic Additive - ALZ 011 001- , then combine this mixture.



- Mixture ratio 3:1 with two-part VHS hardener and 15 % Two-Part Thinner, Special - LVM 009 200 A2- .

**Processing:**



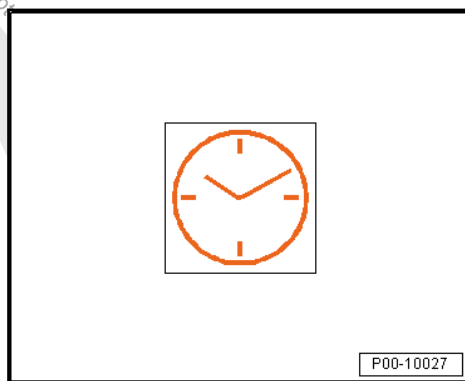
- Apply 1.5 coats.



- Let air dry overnight at +20 °C (68 °F) or after 5 to 10 minute final flash-off time, 30 to 40 minutes at +60 °C (140 °F).  
When using Two-Part Elastic Additive - ALZ 011 001- use longer drying times.

**Two-coat painting solid, metallic, pearls**

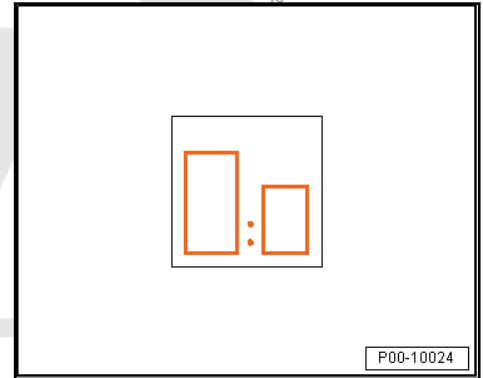
**Base paint:**





- Water-based base paint with 10 % Purified Water - LVW 010 000 A5- .

**Processing:**



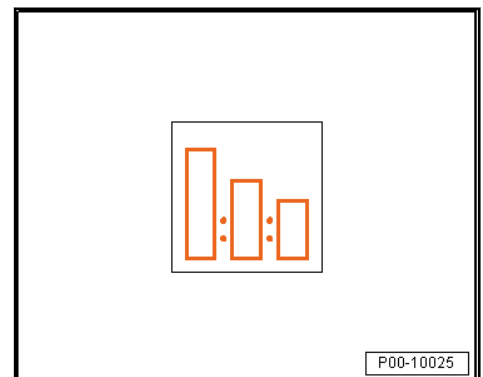
- Apply 1.5 coats.

**Clear Coats:**



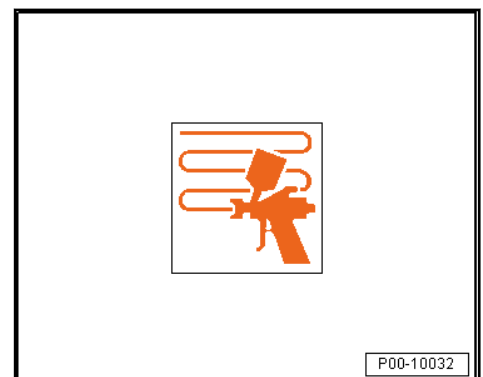
- Mix the two-part HS clear coat with Two-Part Elastic Additive - ALZ 011 001- .

**Processing:**



- According to the respective technical application instructions of the clear coat. Refer to ➔ [“3.8 Clear Coats”, page 207](#) .

**Drying:**





- Let air dry overnight at +20 °C (68 °F) or after 10 minute final flash-off time, 40 to 45 minutes at +60 °C (140 °F). When using Two-Part Elastic Additive - ALZ 011 001- use longer drying times.

#### Painting with satin finish paint shades

##### One-coat painting, top coat:

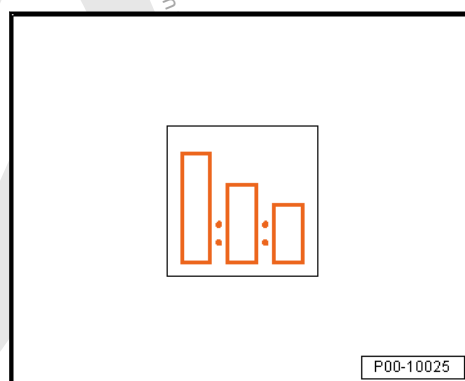
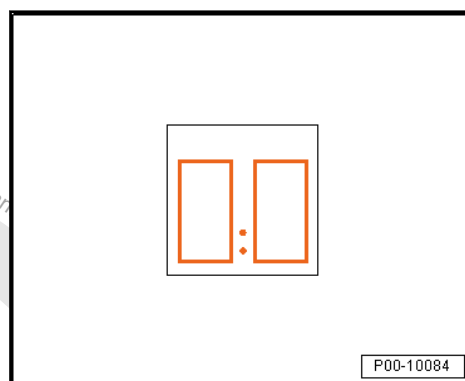
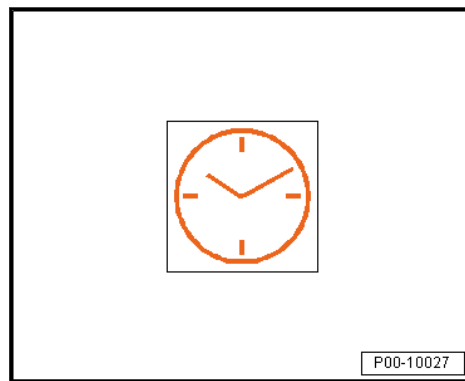
- Mix two-part HS top coat in a 1:1 ratio with Two-Part Matting Component - ALN 775 106- , then combine this mixture.

- Mixture ratio 4:1 with two-part VHS hardener and 15 % Two-Part Thinner, Special - LVM 009 200 A2- .

##### Processing:

- Apply with two spray applications with 5 to 10 minutes intermediate flash-off time for an even paint film surface.

##### Drying:





- Let air dry overnight at +20 °C (68 °F) or after 5 to 10 minutes final flash-off time 30 to 40 minutes at +60 °C (140 °F).

#### Painting in color shades with texture

##### One-coat painting, top coat:

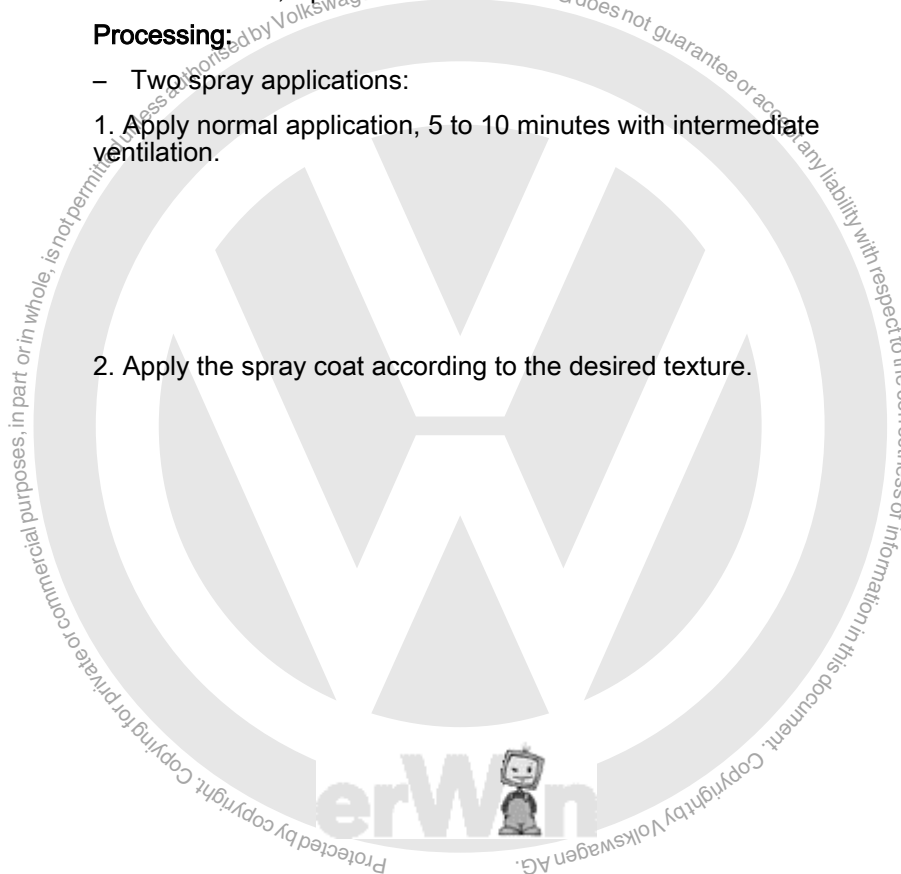
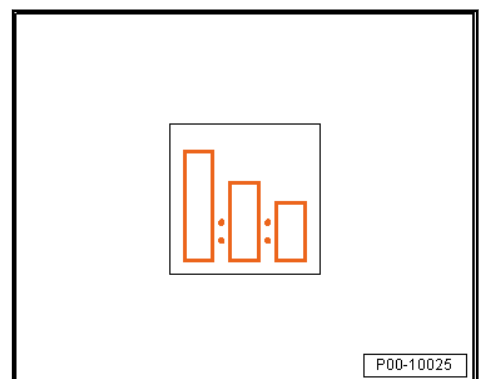
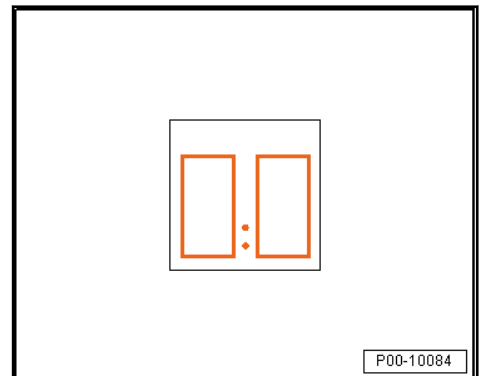
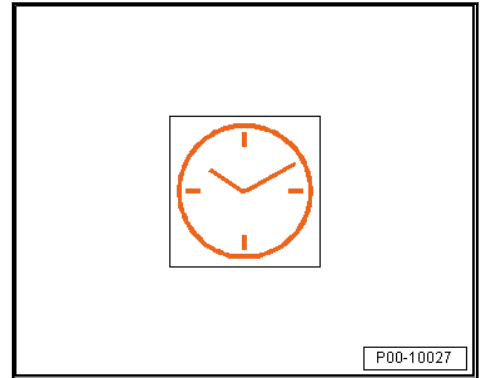
- Mix two-part HS top coat in a 1:1 ratio with Two-Part Structuring Component, Rough/Fine - ALN 775 107/108- , then combine this mixture.

- Mixture ratio 4:1 with two-part VHS hardener and 15 % Two-Part Thinner, Special - LVM 009 200 A2- .

#### Processing:

- Two spray applications:
  1. Apply normal application, 5 to 10 minutes with intermediate ventilation.

2. Apply the spray coat according to the desired texture.

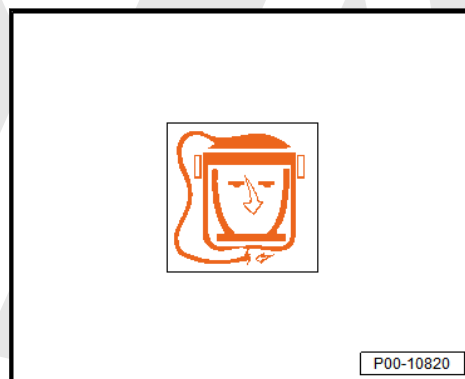
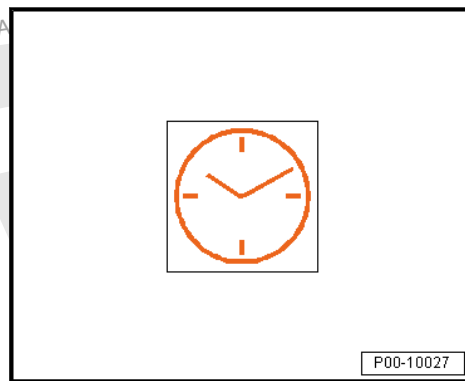




- Let air dry overnight at +20 °C (68 °F) or after 5 to 10 minutes final flash-off time 30 to 40 minutes at +60 °C (140 °F).

#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application



### 3.2.6 Aqua Premium System, Touch-Up System for Two Layer Colors

Edition 02/2018

#### Product description/objective

- ◆ To achieve an optically flawless color shade transition in the blended area or adjacent parts, for example fender/door.

#### Application Instructions

- ◆ Easy and to quick process
- ◆ Various application possibilities (interior, multiple-coat and multi-color coats)
- ◆ High color shade accuracy and high outcome reliability
- ◆ High yield
- ◆ Short process times
- ◆ Easy and safe painting

#### Base surface

Suitable base surfaces:

- ◆ Two-part HS filler, sanded and cleaned
- ◆ Two-part HS filler, unsanded at wet-in-wet process
- ◆ Intact old paint
- ◆ For plastic surfaces, prime with Glazing Bonding Agent - ALO 822 000 10- and rework with elastified two-part HS filler.



### Pre-treatment of base surfaces:

- Clean the factory or old paint or two-part HS filler thoroughly with Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .



P00-10038

- Dry sanding with P500-600 grit sandpaper.



P00-10040

or:

- Dry sanding with P800-1000 grit sandpaper.



### Note

*If beading, edges or grip recesses are present, use a sanding pad beforehand.*



P00-10037

### Cleaning

- Clean the entire surface thoroughly with Silicone Remover - LVM 020 000 A5- to remove dust, sanding residue and other dirt.
- Wipe off any residual silicone remover with a lint-free cloth, leaving no streaks.



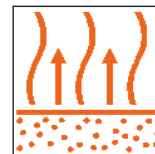
P00-10038





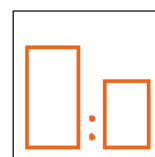
- Allow to evaporate from the cleaned surfaces fully.

When using a tack cloth, use next generation of cloths with an effective light adhesive formula to minimize the risk of chemical or adhesive residue (for example, Duster - VAS 6177- ). Refer to ➔ [“4.2.1 Duster VAS 6177 ”, page 394](#) .



P00-10026

## Mixing ratio



P00-10024

		Base Paint	Additive
		AquaPremium	-LVM 035 200 / 301-
Standard	Effect colors	100	20 %
Standard	Solid colors	100	10 %

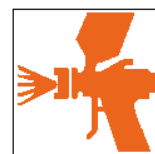
Maximum 10 % -LVM 010 000- purified water can be additionally added.

## Application Instructions

For optimal processing properties, work the base paint directly after adding -LVM 035 200 / 301- additive for AquaPremium .

Use the material in the same workday. Mixed colors should be stored without adding AquaPremium additive.

- Set spray nozzle (see manufacturer's information): “Compliant” 1.2 to 1.3 mm.
- Set spray pressure (see manufacturer's information): “Compliant” to 1.8 to 2.0 bar (26.11 to 29.01 psi) initial speed.



P00-10029



- In 1.0 + 0.5 spray applications.

### Special Instructions

- ◆ Insulate sanded-through areas with Two-Part Wash Primer - LHV 043 000 A2- and then fill with Two-Part HS Performance Filler .

### Method 1:

#### Repair process, touch-up the neighboring surfaces (for example color matching fender/door)

Apply 1-2 complete spray applications of the Touch-Up Additive For Aqua Premium - LVM 035 100 / 110- -2- in the blended area with normal spray pressure on the old paint/ filled surface -1-.



#### Note

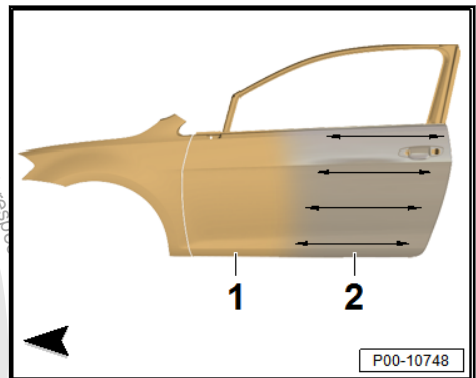
- ◆ Pay attention that the blended area is large enough.
- ◆ Touch-Up Additive for Aqua Premium - LVM 035 100 / 110- is for low relative humidity less than 30 % and / or temperatures above 30 °C (86 °F).
- ◆ For dark colors Touch-Up Additive for Aqua Premium - LVM 035 100 / 110- is not required.

- Then the first base paint spray application -1- is lightly applied from the blended area into the wet touch-up additive Touch-Up Additive for Aqua Premium - LVM 035 100 / 110- -2-.

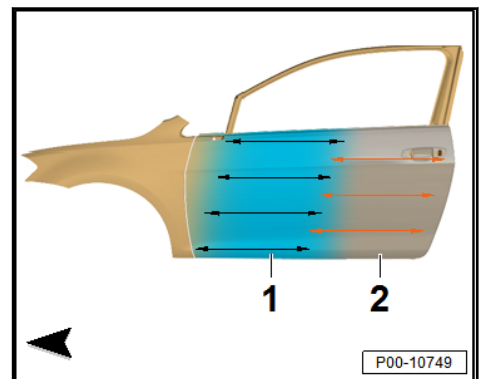
- In the second step a further reduced spray application -2- follows without a flash-off time. Pay attention that the spray application is applied in the area previously shifted forward -1- to archive an even effect.



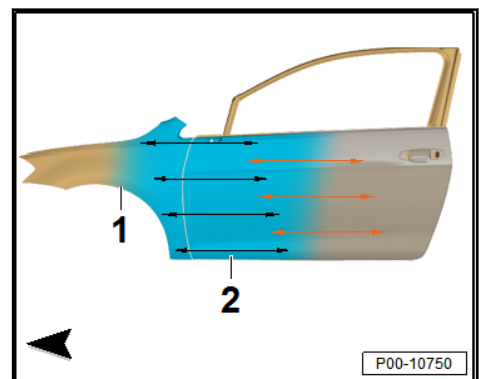
P00-10032



P00-10748



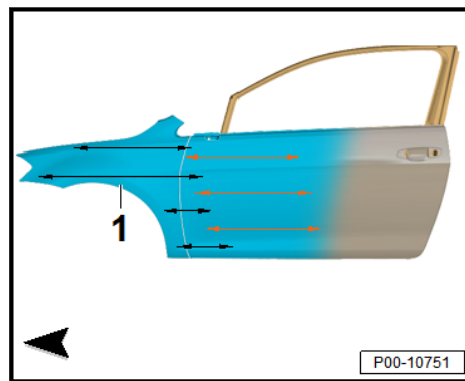
P00-10749



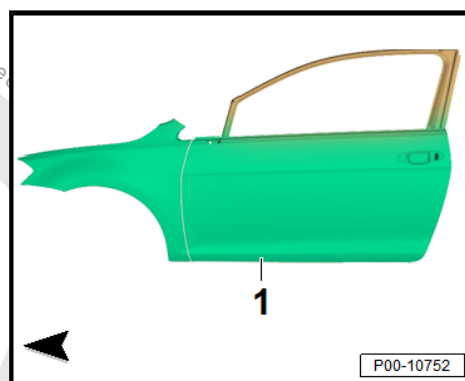
P00-10750



- After the touch-up painting the connection area and the remaining surfaces (starting from the new part) -1- in 1.5 spray applications (standard process) are painted.



- After ventilating, apply a two-part HS clear coat -1- over the entire repair surface.



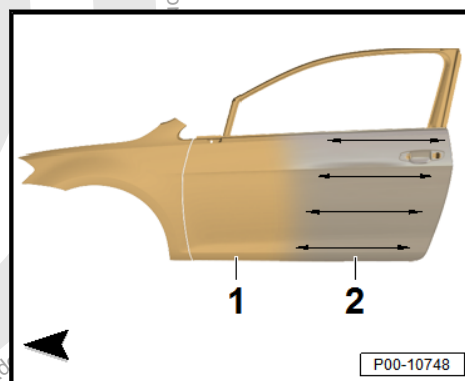
#### Method 2:

**Repair process, touch-up the neighboring surfaces (for example color matching fender/door, alternative method for solid and dark effect color shades).**

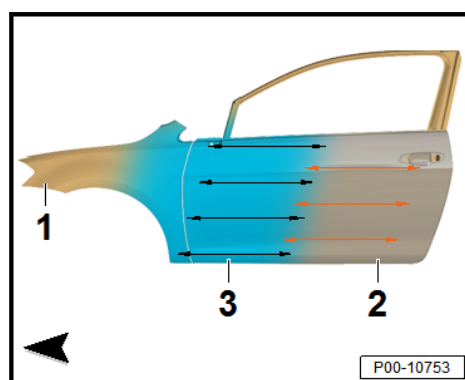
- Apply 1-2 complete spray applications of the Touch-Up Additive For Aqua Premium - LVM 035 100 / 110- -2- in the blended area with normal spray pressure on the old paint/filled surface -1-.

#### Note

- ◆ Pay attention that the blended area is large enough.
- ◆ Touch-Up Additive for Aqua Premium - LVM 035 100 / 110- is for low relative humidity less than 30 % and / or temperatures above 30 °C (86 °F).
- ◆ For dark colors Touch-Up Additive for Aqua Premium - LVM 035 100 / 110- is not required.

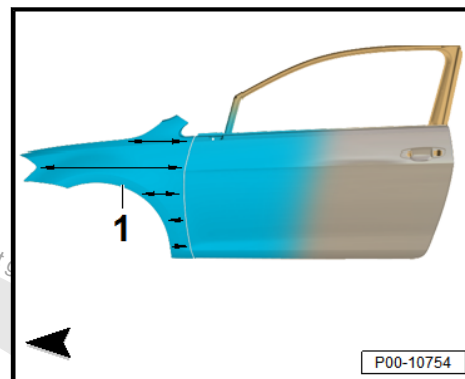


- Then apply the first base paint spray application -3- from the blended area (starting from the new part) to the edge of the wet touch-up additive -2-. Immediately after that, apply the half effect/finish spray application onto the wet touch-up additive -2- and to the new part -1-, from a distance.





- After touch-up painting the base paint application -1- takes place on the remaining surfaces in 1.5 spray applications (standard process).

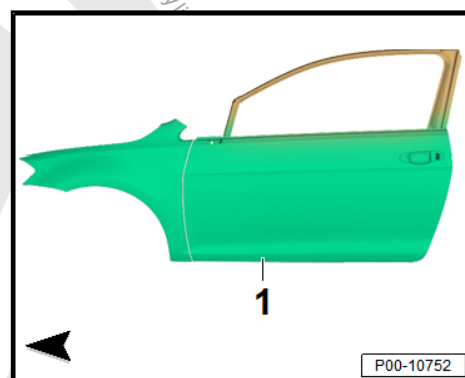


- After ventilating, apply a two-part HS clear coat -1- over the entire repair surface.



#### Note

- ◆ *Starting with the first spray application, it is recommended to even out the subsequent repair area spray applications starting from the touch-up area that is farthest out. For that reason, the subsequent spray applications should always be remain inside the previous spray application in order to archive an even effect.*
- ◆ *While processing the Aqua premium water-based base paint, the spray gun material flow/trigger remains completely open.*
- ◆ *The spraying pressure for the effect spray application can vary between 1.5 and 2.0 bar (21.76 and 29.01 psi) depending on the size of the object.*



#### Method 3:

Repair process, touching-up minimal damage for example clever repair.



#### Note

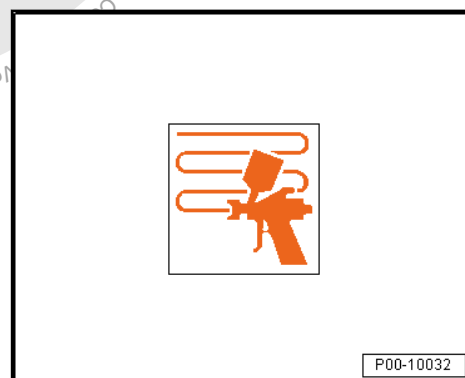
*The repair/filler area should be kept as small as possible.*

#### Possibility 1

- ◆ For most colors, use the adjusted water-based base paint.

#### Possibility 2

- ◆ It is recommended for colors with a high percentage of metal to adjust the Aqua premium water-based base paint in a 1:1 ratio with Touch-Up Additive for Aqua Premium - LVM 035 100 A3- + 10 % Flop Control - LWM 085 386 A2- ( Additive For Aqua Premium - LVM 035 200/301- is not required). Use the Aqua Premium dipstick for clever repair.
- ◆ Depending on the color and covering capacity, apply 3-5 spray applications of this mixture with reduced pressure (0.8-1.5 bar (11.6-21.76 psi)) to the repair area/run-off area. Make sure that each spray application is performed a little bit further and ventilated to form a matte finish. The flash-off time can be accelerated by blowing.



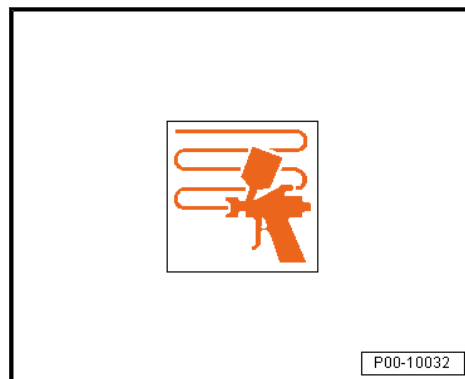


- After an appropriate final flash-off time, the clear coat can be applied.



#### Note

- ◆ While processing the Aqua premium water-based base paint, the spray gun material flow/trigger remains completely open.
- ◆ For efficient ventilating and drying, stationary blowing devices or forced drying (for example heated drying) are recommended.



#### Using the products

- ◆ The spray devices should be suitable for use with water-soluble products; see manufacturer's information.
- ◆ The Aqua Premium mixing paints can only be used within the color tone formulas.
- ◆ When processing individual mixing paints on their own, major deviations from the information given in the application instructions are possible.

#### Cleaning the tools

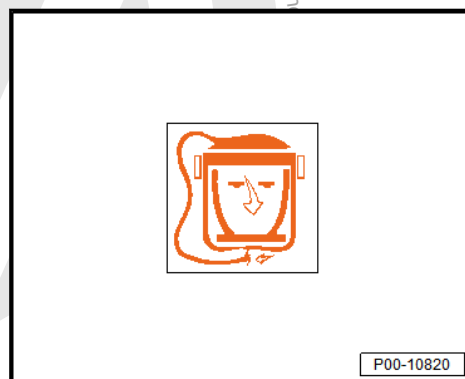
- ◆ Rinse before and after using with Aquaplast Purified Water - LVW 010 000 A5- . Then rinse with Nitro Thinner - LVE 856 000 A3- .

#### Disposal

- ◆ Collect liquid waste from water-soluble products and separate from liquid waste from conventional products. When mixing materials disposal may no longer be possible, which is difficult and costly.

#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application



### 3.2.7 Aqua Premium System, Touch-Up System for Three Layer Effect Colors

Edition 02/2018

#### Product description/objective

To achieve an optically flawless color shade transition in the blended area or adjacent parts, for example fender/door.

#### Application Instructions

##### Base surface

Suitable base surfaces:

- ◆ Two-part HS filler, sanded and cleaned



- ◆ Thoroughly sanded and cleaned old paint
- ◆ For plastic surfaces, prime with Glazing Bonding Agent - ALO 822 000 10- and rework with elastified two-part HS filler ( Two-Part Plastic Adhesive Filler - LKF 696 009 A2- / Two-Part Plastic Adhesive Filler - LKF 696 040 A2- ).

#### Pretreatment of base surfaces

- Clean the factory or old paint or two-part HS filler thoroughly with Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .



P00-10038

- Dry sanding with P500-600 grit sandpaper.



P00-10040

or:

- Wet-sand with P800-1000 grit sandpaper.



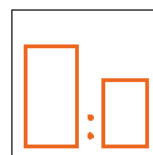
#### Note

*If beading, edges or grip recesses are present, use a sanding pad beforehand.*



P00-10041

#### Mixing ratio



P00-10024

		Base Paint	Hardener	Additive
		AquaPremium	- LVM 045 000-	-LVM 035 200 / 301-



		Base Paint	Hardener	Additive
Standard	Effect color	100	-	20 %
2K hardened	Effect color	100	5 %	20 %
Standard	Solid colors	100	-	10 %
2K hardened	Solid colors	100	5 %	10 %
Primary color shade	-LVM 035 100 / 110-	100	5 %	-

Maximum 10 % -LVM 010 000- purified water can be additionally added.

### Application Instructions

For optimal processing properties, use the water-based base directly after adding AquaPremium Hardener - LVM 045 000- and AquaPremium Additive - LVM 035 200 / 301- .

- ◆ Solid primary colors - 5 %: 1.5 to 2.0 hours
- ◆ Effect primary color - 5%: 45 minutes to 1.0 hours
- ◆ Touch-up additive 5 %: 1.0 to 1.5 hours

### Cleaning

- Clean the entire surface thoroughly with Silicone Remover - LVM 020 000 A5- to remove dust, sanding residue and other dirt.
- Wipe off any residual silicone remover with a lint-free cloth, leaving no streaks.

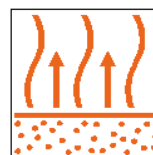
- Allow wet-sanded surfaces and cleaned surfaces to dry completely.

When using a tack cloth, use next generation of cloths with an effective light adhesive formula to minimize the risk of chemical or adhesive residue (for example, Duster - VAS 6177- ). Refer to ⇒ ["4.2.1 Duster VAS 6177 ", page 394](#) .

- Set spray nozzle (see manufacturer's information): "Compliant" 1.2 to 1.3 mm.
- Set spray pressure (see manufacturer's information): "Compliant" to 1.8 to 2.0 bar (26.11 to 29.01 psi) initial speed.



P00-10038



P00-10026

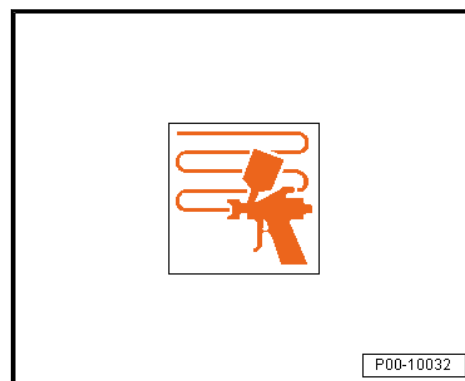


P00-10029

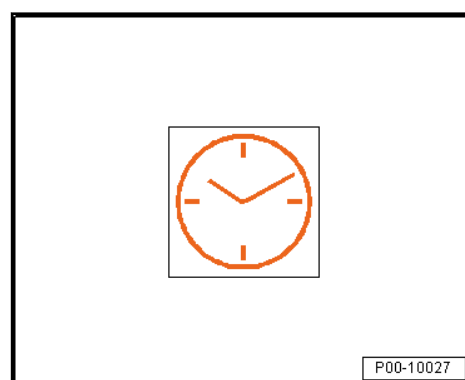




- Apply base color (two-part hardened) in 1.5 to 2.0 spray applications.
- Ventilate and let dry.
- Apply effect color in 1.0 + 0.5 spray applications.



### Drying:



	Bake	Blowing	Ambient
20 °C (68 °F)	-	-	15 to 25 minutes
35 to 40 °C (95 to 104 °F)	-	8 to 12 minutes	-
60 to 65 °C (140 to 149 °F)	10 to 15 minutes.	-	-

### Special Instructions

- ◆ Insulate sanded-through areas with Two-Part Wash Primer - LHV 043 000 A2- and then fill with Two-Part HS Performance Filler .
- ◆ Test spraying on sheet metal is strongly recommended.

**Repair process, touch-up the neighboring surfaces (for example color matching fender/door)**





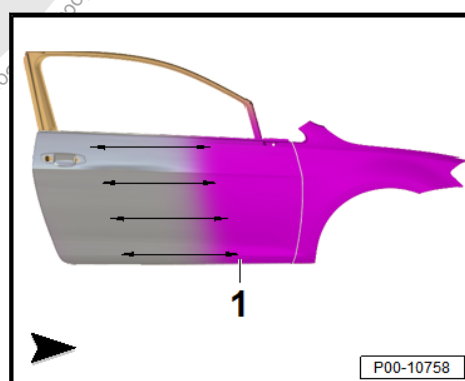
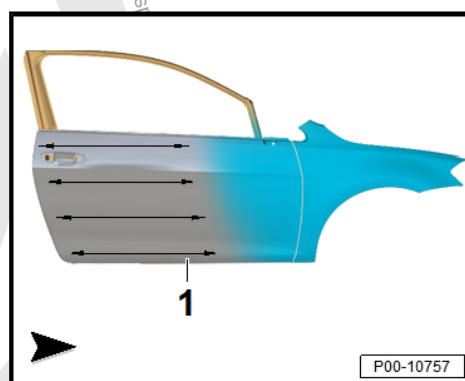
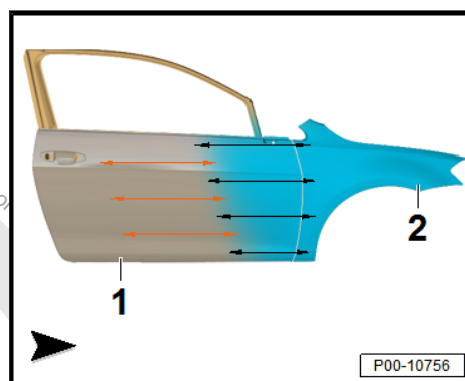
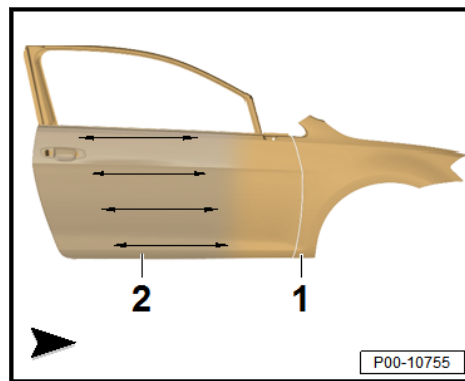
- Apply 1-2 complete spray applications of the Touch-Up Additive For Aqua Premium - LVM 035 100 / 110- -2- in the blended area with normal spray pressure on the old paint/filled surface -1-.



#### Note

*Pay attention that the blended area is large enough.*

- Adjust the base color. Refer to ➤ [page 57](#) .
- Apply up to covering capacity on the repair area and on the bordering touch-up area -2- at the same time the spray the run-out zone is in the wet Touch-Up Additive for Aqua Premium - LVM 035 100 / 110- -1-.
- Ventilate and let dry.
- After ventilating, apply 1 to 2 complete spray applications of the Touch-Up Additive For Aqua Premium - LVM 035 100 / 110- -1- in the blended area again without hardener.



#### Step 1, painting the effect color (from the outside inward)

- Adjust the effect color. Refer to ➤ [page 57](#) .
- Apply the effect color from run-out area to the to the new part -1-. This means it is applied from the outside toward the inside (wet-in-wet) in the Touch-Up Additive For Aqua Premium - LVM 035 100 A3- .
- Then if necessary, apply the next effect color spray application (wet in wet) within the previous spray application to the new part.

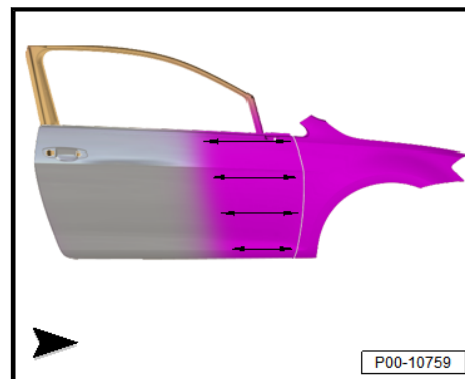


#### Note

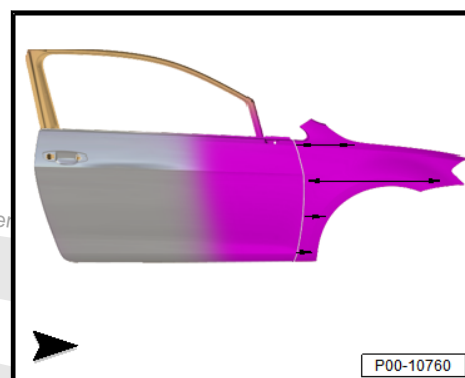
*For some effect colors, two to three additional spray applications are necessary to achieve the effect.*



**Step 2, painting the effect color (from the outside inward)**



**Step 3, painting the effect color (from the outside inward)**



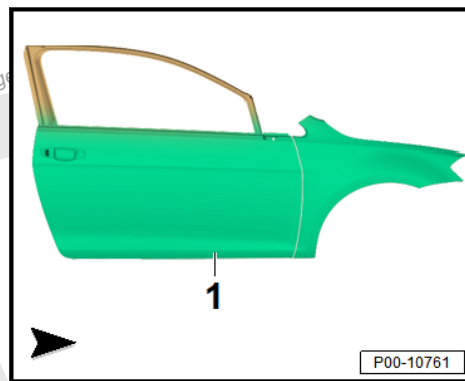


- After ventilating, apply a two-part HS clear coat -1- over the entire repair surface.



#### Note

- ◆ *Starting with the first spray application, it is recommended to even out the subsequent repair area/base color spray applications starting from the touch-up area that is farthest out. For that reason, the subsequent spray applications should always remain inside the previous spray application, in order to avoid visible contours/shadows.*
- ◆ *While processing the Aqua premium water-based base paint, the material flow (spray gun trigger) remains completely open.*
- ◆ *The spraying pressure for the effect spray application can vary between 1.5 and 2.0 bar (21.76 and 29.01 psi) depending on the size of the object.*
- ◆ *For additional notes to the drying times refer to the technical application information.*



#### Notes for large area applications:

- ◆ Use the Additive for Aqua Premium - LVM 035 200 / 301- when processing three-layer effect colors
- ◆ The addition of Aquaplast Purified Water - LVW 010 000- is recommended for larger surfaces, high temperatures and low humidity.
- ◆ For efficient ventilating and drying, stationary blowing devices or forced drying (for example heated drying) are recommended.

#### Using the products

- ◆ The spray devices should be suitable for use with water-soluble products; see manufacturer's information.
- ◆ The Aqua Premium mixing paints can only be used within the color tone formulas.
- ◆ When processing individual mixing paints on their own, major deviations from the information given in the application instructions are possible.

#### Cleaning the tools

- ◆ Rinse before and after using with Aquaplast Purified Water - LVW 010 000- . Then rinse with Nitro Thinner - LVE 856 000 A3- .

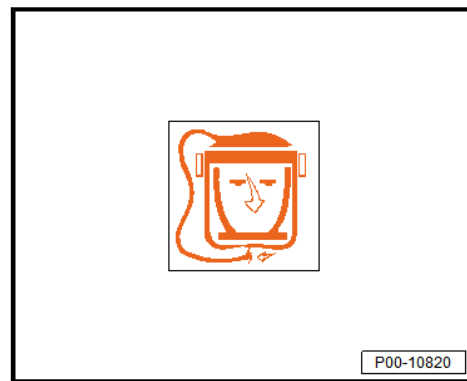
#### Disposal

- ◆ Collect liquid waste from water-soluble products and separate from liquid waste from conventional products. When mixing materials, disposal may no longer be possible, which is difficult and costly.



#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application



### 3.2.8 Aqua-Premium-System, Product Preparation for Preparation

Edition 02/2018

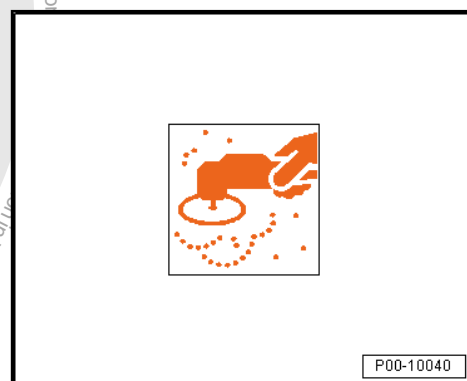
Product preparation for the preparation of super effect silver color (use the - LVM 086 305- ). Refer to ➔ [page 63](#) .

Product preparation for the preparation with Hardener for Aqua-Premium - LVM 045 000- . Refer to ➔ [page 65](#) .

Product preparation for the preparation of super effect silver color (use the - LVM 086 305- )

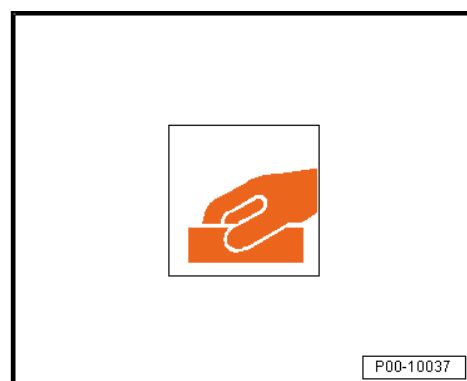
#### Application Instructions

- Carefully dry sand with rotary sander and dust extraction, P1000-1200 grit sandpaper.



or:

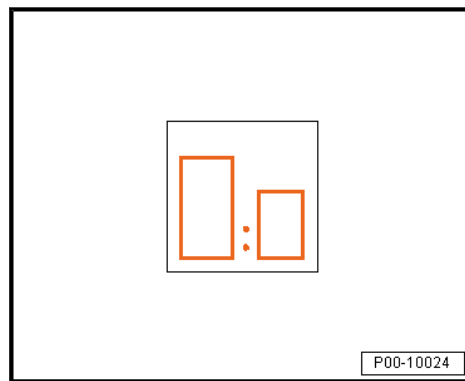
- Carefully hand dry sand on the corners and edges with P3000 grit sandpaper.





## Processing

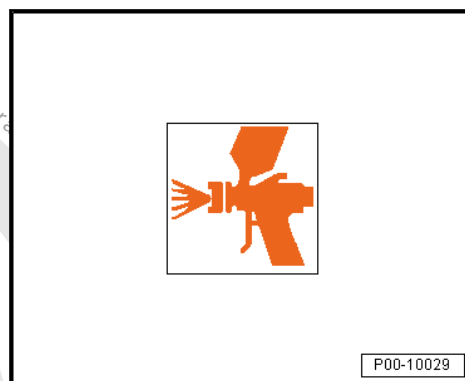
Mixture ratio:



		Base Paint	Additive
		AquaPremium	-LVM 035 200 / 301-
Standard	Effect colors	100	50%

For optimal processing properties, use the water-based base directly after adding Aqua-Premium Additive - LVM 035 200 / 301- .

- ◆ Use the material on the same workday
- ◆ Mixed colors should be stored without adding Aqua-Premium Additive - LVM 035 200 / 301- .
- Set spray nozzle (see manufacturer's information): "Compliant" 1.2 to 1.3 mm.
- Adjust the spray nozzles (see manufacturer tolerances): "Compliant" 2.8 to 2.0 bar (40.61 to 29.01 psi) initial speed.



- Apply the effect color 1.0 + 0.5 spray applications.



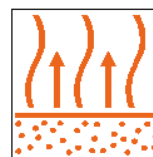


## Drying

The flash-off time for a clear coat application should be long enough for the surface to become completely matted.

Can be painted over with:

- ◆ Two-part HS clear coat (see data sheet of the respective product)



P00-10026

## Personal Protective Equipment

- ◆ Note the safety data sheets
- ◆ Use only in well ventilated spaces
- ◆ Wear the personal protective equipment during application

**Product preparation for the preparation with Hardener for Aqua-Premium - LVM 045 000-**

## Application Instructions

### Base surface

Suitable base surfaces:

- ◆ Factory paint or old paint, sanded and cleaned
- ◆ Two-part HS filler, sanded and cleaned
- ◆ Two-part HS filler, unsanded at wet-in-wet process



P00-10820

### Pretreatment of base surfaces

- Dry sand with rotary sander and dust extraction, P500-600 grit sandpaper.



P00-10040

or:

- Dry sanding with P800-1000 grit sandpaper.



### Note

*If beading, edges or grip recesses are present, use a sanding pad beforehand.*

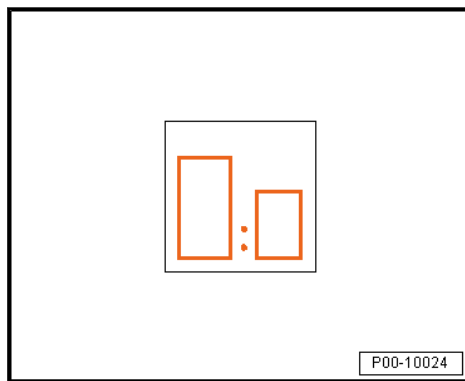


P00-10037



## Processing

Mixture ratio:



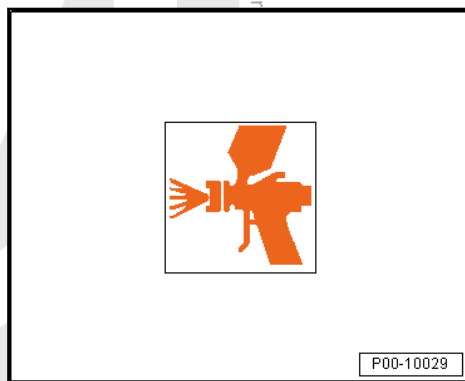
		Base Paint	Hardener	Additive
		Aqua-Premium	- LVM 045 000-	-LVM 035 200 / 301-
Engine/motor compartment/vehicle interior	Solid colors	100	10 %	10 %
Engine/motor compartment/vehicle interior	Effect color	100	10 %	20 %

On multi-color finishes, with three coat base colors, on engine and interior paintwork and on the general processing, where this is required, the Aqua Premium Water-Based Base can be activated with Aqua-Premium Hardener - LVM 045 000- .

Maximum 10 % Purified Water - LVM 010 000- can be added when working at low humidity and warm conditions.

For optimal processing properties, work the Aqua Premium Water-Based Base directly after adding Aqua-Premium Hardener - LVM 045 000- and Aqua-Premium Additive - LVM 035 200 / 301- .

- ◆ Solid colors - 5 %: 1.5 to 2.0 hours
- ◆ Solid colors: 10%: 45 minutes to 1 hour
- ◆ Effect color - 5%: 45 minutes to 1 hour
- ◆ Effect color: 10 %: 30 minutes through 1 hour
- ◆ Touch-up additive 5 %: 1.0 to 1.5 hours
- Set spray nozzle (see manufacturer's information): "Compliant" 1.2 to 1.3 mm.
- Set spray pressure (see manufacturer's information): "Compliant" to 1.8 to 2.0 bar (26.11 to 29.01 psi) initial speed.







- Apply color in 1.0 + 0.5 spray applications. Immediately after that, apply an effect spray application from a distance.



#### Note

*For painting in the vehicle interior no clear coat is required.*

#### Flash-off time

The flash-off time for a clear coat application should be long enough for the surface to become completely matted.

Can be painted over with:

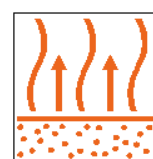
- ◆ Two-part HS clear coat (see data sheet of the respective product)

#### Drying:

	Vehicle interior 10 % hardener
20 °C (68 °F)	12 to 16 minutes
35 to 40 °C (95 to 104 °F)	-
60 to 65 °C (140 to 149 °F)	15 to 20 minutes



P00-10032



P00-10026



P00-10027

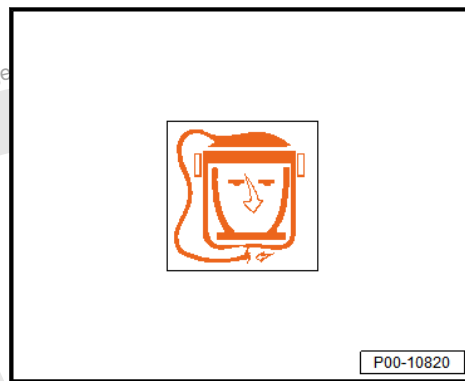


## Personal Protective Equipment

- ◆ Note the safety data sheets
- ◆ Use only in well ventilated spaces
- ◆ Wear the personal protective equipment during application

## Climate Chart

- ◆ Use the climate chart to select the correct additives for the Aqua-Premium .
- ◆ Pay attention to the size of the repair area.
- ◆ The size of the repair can require a longer adjustment
- ◆ Read out the booth temperature in paint mode
- ◆ Check the relative humidity in the booth using a hygrometer



## Note

- ◆ *Only on metal and pearlescent colors at a relative humidity of 65 % 30 % Additive for Aqua-Premium - LVM 035 200- can be added.*
- ◆ *For smaller or medium repairs and a humidity between 30 - 70 % use the standard Additive for Aqua-Premium - LVM 035 200- .*
- ◆ *At a lower humidity under 30 % and larger repairs use the longer Additive for Aqua-Premium - LVM 035 301- . It is also suitable at higher temperature in combination with medium or lower humidity and is also helpful on large surfaces with lower humidity, depending on the temperature.*
- ◆ *Purified Water - LVW 010 000- can be added at very low humidity combined with higher temperature.*
- ◆ *Purified Water - LVW 010 000- is also helpful on large surface and lower humidity, depending on the temperature.*

°C in the booth	Relative humidity in %	0 to 30 %	31 to 42 %	31 to 64 %	43 to 64 %	65 to 90 %
10 to 15 °C (50 to 59 °F)		-	-	-	-	-
15 to 30 °C (59 to 86 °F)		20 % -LVM 035 301-	-	20 % -LVM 035 200-	-	30 % -LVM 035 200-
30 to 55 °C (86 to 131 °F)		20 % -LVM 035 301- / 10 % -LVW 010 000-	20 % -LVM 035 301-	-	20 % -LVM 035 200-	30 % -LVM 035 200-

## 3.2.9 Aquaplast Design and Multi-Color Paintwork

### Edition 05/2014

In order to achieve error-free design and multi-colored paint applications using Aquaplast solid, metallic, pearlescent base paint, pay attention to the important notes and in some cases use special tools.

### Preparation:

If the design is sketched out on the base surface (filler, paint) do not use any marking pens with water soluble colors to



prevent it from »bleeding through« in the base paints. If it is not possible, the markings must be carefully removed using Silicone Remover - LSW 019 000 A5- after covering the design.

#### **Covering the base surfaces (two-part HS top coat)**

For work on two-part HS top coats commercially available outline/decorative tape and masking tape are used.

#### **Covering the Aqua plus solid, metallic, pearlescent base paint**

Use commercially available outline/decorative tape and masking tape.

- ◆ Carefully apply outline and masking tape.
- ◆ If surfaces are to be covered, use cover sheeting (To avoid marks)
- ◆ Do not leave outline and masking tape on the surfaces longer than necessary.

#### **Dry the individual water based paint layers.**

Heated drying is not recommended, because there is a risk that the glue from the outline and masking tape will transfer to the water-based paint.

The individual water based paint layers can be dried with an air nozzle or slightly raised temperature. These are the most effective drying methods.

For the individual colors the application of a layer of more than 40 µm thick must be prevented. As a result, problems may arise, such as the film debonding when exposing, during drying or with covering ability.

#### **Multi-color coats with insulating layer**

On multi-color finishes, it is recommended to insulate the individually applied coats with HS clear coat to prevent »bleeding through« or discoloring on the individual coats.

For this kind of insulation layer, the Two-Part HS Vario Clear Coat - L2K 769 K01 A5- mixed with Two-Part HS Hardener, Short - LHA 021 004 A3- is especially suitable.

To achieve an acceptable drying or covering ability the use of longer hardener is not recommended.

The insulation layer is applied exclusively on the Aquaplus water-based base paint.

Then carry out the required steps as an example for a multi-color paintwork of three color shades.

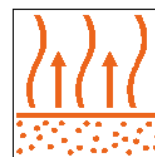
- Apply the first color shade with Aquaplus water-based base paint.



P00-10032



- Let the base paint dry a minimum of five hours at +20 °C (68 °F).



P00-10026

Forced drying:

20 minutes at +20 °C (68 °F) and 30 minutes at +60 °C (140 °F)

After drying allow it to cool.

- Tape off the contours with commercially available tape or commercially available foil.



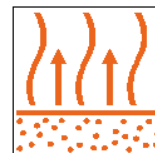
P00-10027

- Apply a thin complete spray application of Touch-Up Additive for Aquaplus - LVM 030 000 A2- .



P00-10032

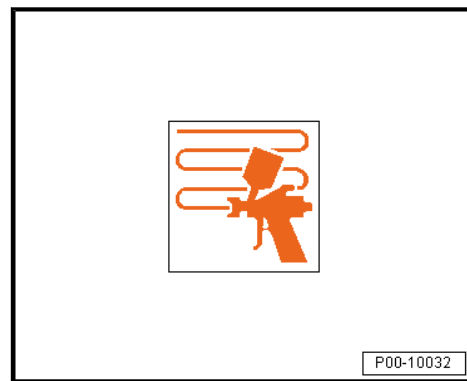
- Allow the spray application to dry for 20 minutes at +20 °C (68 °F).



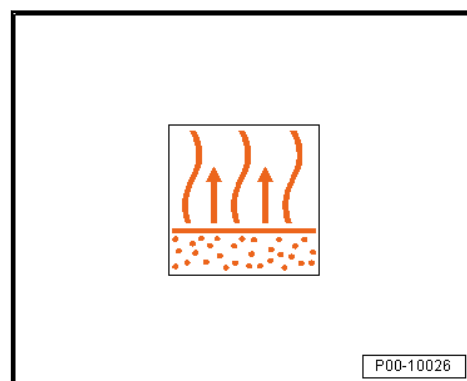
P00-10026



- Apply the second color shade with Aquaplus water-based base paint.



- Let the base paint dry a minimum of five hours at +20 °C (68 °F).

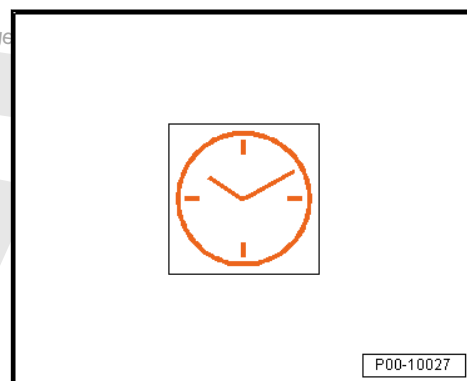


Forced drying:

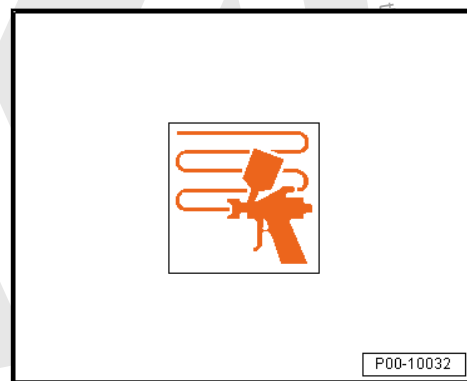
20 minutes at +20 °C (68 °F) and 30 minutes at +60 °C (140 °F)

After drying allow it to cool.

- Tape off the contours with commercially available tape or foil.

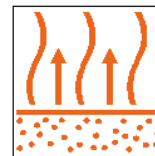


- Apply the third color shade with Aquaplus water-based base paint.





- Let the matte base color dry.
- Remove the masking.



P00-10026

- Apply the top layer with two-part HS clear coat.



#### Note

- ◆ For the required masking work only use plastic film, to prevent dissolving of the paint coats already applied.
- ◆ By covering the markings they will disappear due to the following clear coat application.
- ◆ For all additional parameters for the application of the respective relevant products refer to the respective technical application information.



P00-10032

#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application



P00-10820

### 3.2.10 Processing Notes for Paint with Restricted Covering Capacity

The notes »Restricted Covering Capacity« appears in  
⇒ [www.vwcolor.info](http://www.vwcolor.info) then additionally view the labor operation  
51017178.



## 3.3 Filling Paste

- ⇒ [“3.3.1 Two-Part Steel Filling Paste Set”, page 73](#)
- ⇒ [“3.3.2 Two-Part Fine Filling Paste”, page 75](#)
- ⇒ [“3.3.3 Two-Part Fine Filling Paste, Flexible”, page 79](#)
- ⇒ [“3.3.4 Two-Part Spray Filling Paste”, page 82](#)
- ⇒ [“3.3.5 Two-Part IR Premium Filling Paste”, page 86](#)
- ⇒ [“3.3.6 Two-Part Epoxy Resin Scraper”, page 89](#)

### 3.3.1 Two-Part Steel Filling Paste Set

#### Definition:

- ◆ Two-Part Steel Filling Paste Set - DA 787 300 A2-

Edition 09/2012

#### Product Description

This filling paste is made of polyester and a metal powder mixture and is used to produce true-to-contour surfaces on highly stressed body surfaces. This filling paste works especially well as a replacement for lead-coated alluvial tin.

This filling paste is pliable and sandable while maintaining a high degree of firmness and temperature stability, which makes it especially suitable to be painted over.



#### Note

*The Hardener - LVM 004 211 A1- must be used at temperatures over 30 °C (86 °F) and / or with a relative humidity over 80 %.*

#### Application Instructions

##### Base surface

Suitable base surfaces:

- ◆ Steel
- ◆ General metallic base surfaces
- ◆ Galvanized sheet steel

##### Pre-treatment of base surfaces:

- Carefully remove any grease and sand the base surface. The base surfaces must be prepared using the Pneumatic Brush Grinder Set. Refer to ⇒ [“4.1.6 Pneumatic Brush Grinder Set VAS 6446A”, page 386](#) . This means down to the bare metal with P40 grit sandpaper. If necessary, clean the dirty surface once again and then remove any cleaning residue again using the brush grinder.



P00-10037



- Clean once more using silicone remover before reworking.

### Processing

Application type: filling

Mixture ratio:

- Both components are mixed in a ratio of 1 part by volume of hardener liquid and 2.5-3 parts by volume of powder or 10 grams of hardener liquid and 58 grams of powder to create a product that can be spread.



### Note

*Avoid using too much hardener liquid, since this can negatively affect the final strength and adhesion of the filling paste.*

### Curing Time:

- The pot life is approximately four to six minutes at +20 °C (68 °F).

### Reaction Temperature:

- The reaction temperature requires at least +5 °C (41 °F).

### Drying

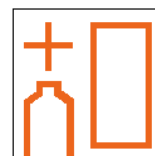
Air Drying:



P00-10038



P00-10031



P00-10022

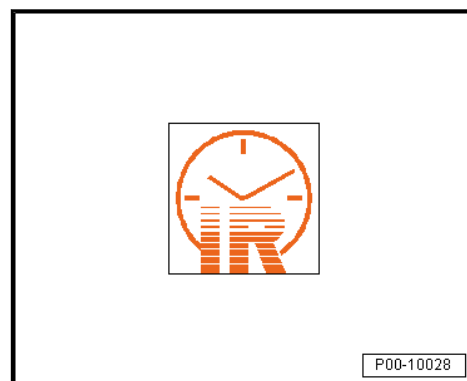


P00-10027





- Ventilate approximately 10 minutes at +20 °C (68 °F).
- After ventilation, begin hardening/curing process using a short-wave IR heater.
- ◆ Pre-hardening: 10 minutes at approximately 50 °C (122 °F)
- ◆ Hardening 1st step: 10 minutes at 75 °C (167 °F)
- ◆ Hardening 2nd step: 10 minutes at 85 °C (185 °F)



#### Sanding compatibility

- Use the body planer to remove excess material before the thermal final curing process.
- Then use P80 grit dry sandpaper to sand the contours.

#### Reworking:

No restriction

#### Characteristics

Air Drying:	Powder + Hardener Liquid	
Flashpoint:	Hardener	33 °C (91.4 °F)
	Powder	Not applicable



#### Storage

The guaranteed shelf life is 12 months from the production date. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).

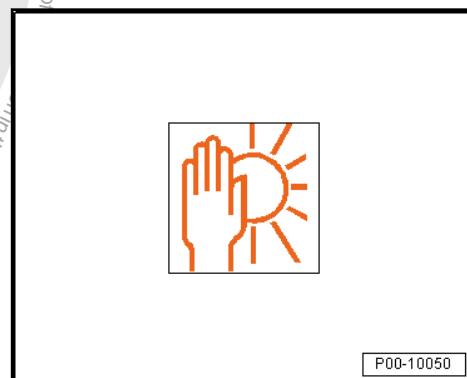
#### Storage Conditions

Store in a cool and dry place. Storage temperature +20 °C (68 °F).



#### Note

- ◆ Use only in well ventilated spaces.
- ◆ The wearing of protective gloves and dust masks is recommended.
- ◆ The use of a grinding dust extractor is recommended.



### 3.3.2 Two-Part Fine Filling Paste

#### Definition:

- ◆ Two-Part Fine Filling Paste - LSP 784 002 A2-

Edition 01/2017

#### Product Description

The two-part fine filling paste is a very fine thixotropic polyester filling paste.

This filling paste is suitable for small repairs.



## Application Instructions

### Properties

- ◆ Fine and non-porous
- ◆ Removes easily
- ◆ Sands easily
- ◆ High elasticity for touching up synthetic surfaces

### Base surface

Suitable base surfaces:

- ◆ Steel
- ◆ Aluminum
- ◆ Glass fiber reinforced plastics
- ◆ Old paint and factory paint
- ◆ Hardened two-part filler/two-part primers
- ◆ Plastic parts glaze-primed with Two-Part Plastic Adhesive Filler - LKF 696 009 A2- / Two-Part Plastic Adhesive Filler - LKF 696 040 A2- or Bonding Agent - ALO 822 000 10-
- ◆ Primed surfaces with two-part polyester filling paste.

Refer to ➔ **"2.3 Fundamental Procedure when Processing Areas Sanded Through to Base Surface (Bare Metal)", page 9**



### Caution

*This filling paste may not be applied to PVB (acid-hardening) adhesive primers or one-part primers (for example, synthetic resin).*

*Application on thermoplastic or elastic coatings is also not possible. In these cases, only apply filler paste to bare steel.*

### Pre-treatment of base surfaces:

- Remove any grease and sand the surface.
- With UP-GF underbodies, clean components of any residual agents and sand the surface.



P00-10037



- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.

#### Processing:

#### Application type:

- Apply filling paste.

#### Mixture ratio:

- Add 2 % by weight Two-Part Hardener - LYM 018 000 A1/A2- .



#### Note

*Avoid using excessive hardener paste, to prevent it from bleeding through, especially on daylight colors and light metallic colors.*

#### Curing Time:

- At +20 °C (68 °F) room temperature for about three to five minutes.

#### Reaction Temperature:

- Minimum +5 °C (41 °F)

#### Drying

##### Air Drying:

- At +20 °C (68 °F) room temperature for about 15 to 30 minutes.



P00-10038



P00-10031



P00-10022



P00-10027



#### Infrared drying:

- ◆ Short-wave heaters for two to three minutes (at 50 % power)



P00-10028

#### Sanding compatibility

In connection with the aforementioned drying time:

- Dry-sand with sandpaper, P180 - 240 grit sandpaper



#### Note

Temperature resistance up to +80 °C (176 °F).



P00-10040

#### Reworking

Recommended structure:

- ◆ One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2-
- ◆ Two-Part Wash Primer - LHV 043 000 A2- and Two-Part HS Filler
- ◆ ' Two-Part Plastic Adhesive Filler - LKF 696 009 A2- / Two-Part Plastic Adhesive Filler - LKF 696 040 A2-
- ◆ Glazing Bonding Agent - ALO 822 000 10- and elasticized Two-Part HS Filler (for plastic parts)
- Then paint over with the top coat.



P00-10029

#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

#### Characteristics

Delivery Viscosity	Pasty
Flashpoint:	Filling paste over 23 °C (73.4 °F)
VOC value: 2004/42/ IIB(b) (250)170	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 250 g (8.8 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 170 g (6 oz)/L.



P00-10820

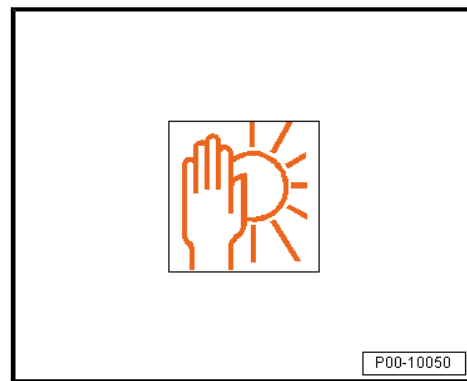
#### Storage

The guaranteed shelf life is 12 months from the production date. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



### Storage Conditions

- Storage Temperature +20 °C (68 °F) (temperature should not exceed +30 °C (86 °F)).



### 3.3.3 Two-Part Fine Filling Paste, Flexible

#### Definition:

- ◆ Two-Part Fine Filling Paste, Flexible - LSP 787 100 A1-

Edition 07/2010

#### Product Description

The Two-Part Fine Filling Paste, Flexible - LSP 787 100 A1- is a two-part filler paste with high filling characteristics.

The product does not collapse and has excellent adhesion on a multiple base surfaces.

This filling paste is used especially for plastics:

- ◆ For repair of plastic exterior body components where surface is damaged with material removed (scratches, holes, rips), without being broken through
- ◆ For filling of KU-plastics that were previously repaired with the Plastic Repair Set - D 007 700-
- ◆ For filling over a repair area to eliminate a mark

#### Application Instructions

##### Properties

- ◆ Constant, fine, creamy consistency
- ◆ High filling characteristics - no collapsing
- ◆ Hardens quickly
- ◆ Sands well
- ◆ Good adhesion on metal and plastic

##### Base surface

Suitable base surfaces:

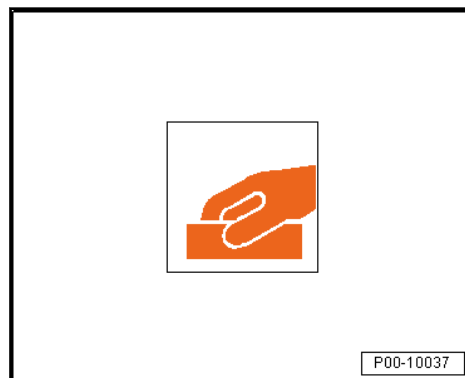
- ◆ Steel
- ◆ Galvanized sheet steel
- ◆ Aluminum
- ◆ On all cleaned and sanded plastics in vehicle area
- ◆ Fiberglass-reinforced plastics (UP-GF)
- ◆ Well-sanded old paint or factory paint
- ◆ Hardened two-part filler/two-part primers



Refer to ➔ **"2.3 Fundamental Procedure when Processing Areas Sanded Through to Base Surface (Bare Metal)", page 9**

**Pre-treatment of base surfaces:**

- Remove any grease and sand the surface.
- With UP-GF underbodies, clean components of any residual agents and sand the surface.
- Clean once more using the Silicone Remover, Long - LVM 020 100 A5- or Silicone Remover - LVM 020 000 A5- before reworking.

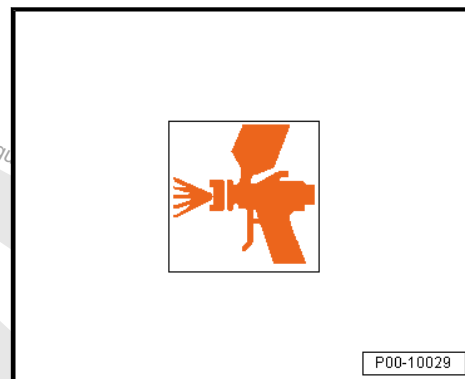




## Reworking

Recommended structure:

- ◆ Fine filling paste by itself.
- ◆ Rework fine filling paste with Two-Part Fine Filling Paste - LSP 784 002 A2- or with Two-Part Spray Filling Paste - ALN 788 007- (except on galvanized steel).
- ◆ Prime bare spots and filled areas with Two-Part Wash Primer - LHV 043 000 A2- and then fill with Two-Part HS Performance Filler
- Then paint over with the top coat.



### Note

*Before filling, dry-sand the entire surface with P280-400 sandpaper.*

## Application Table

Mixing ratio	2 to 3% by weight		
Add hardener	Two-Part Hardener - LVM 018 00 A1-		
Pot life	2 to 4 minutes at +20 °C (68 °F)		
Drying time (air drying at +20 °C (68 °F) room temperature)	20 to 30 minutes		
Infrared drying:			
	Short-wave	Approximately three minutes (at 50 % output)	
	Middle-wave	Approximately five minutes	
Sanding compatibility		Preliminary sanding	Final sanding
	Wet	As fine filling paste P180 grit	As fine filling paste with P320 - P360 grit
	Dry	As filling paste P80 grit, as filling paste P120 grit	As filling paste P120-P240 grit, as fine filling paste P280 grit



### Caution

*This filling paste may not be applied to PVB (acid-hardening) adhesive primers or one-part primers (for example, synthetic resin).*

*Application on thermoplastic or elastic coatings is also not possible. In these cases, only apply filler paste to bare steel.*





#### Note

- ◆ *Before filling, dry-sand the entire surface with P280-320 sandpaper.*
- ◆ *Avoid using excessive hardener paste, to prevent it from bleeding through, especially on daylight colors and light metallic colors.*
- ◆ *Reaction temperature at least +5 °C (41 °F).*

### 3.3.4 Two-Part Spray Filling Paste

#### Definition:

- ◆ Two-Part Spray Filling Paste - ALN 788 007-

Edition 01/2017

#### Product Description

The Two-Part Spray Filling Paste - ALN 788 007- is a two-part spray filling paste for vehicle repair work. Application: to level uneven surface irregularities

#### Other Application Areas:

- ◆ Is especially suitable for use on large surfaces.
- ◆ Sprays on well.
- ◆ Easy to process and maintains good stability under load.
- ◆ Flows well
- ◆ VOC value less than 250 g (8.8 oz)/L

#### Application Instructions

##### Base surface

Suitable base surfaces:

- ◆ Cleaned and sanded, primed with Two-Part Wash Primer - LHV 043 000 A2- and then insulated with Two-Part HS Performance Filler steel panels, galvanic/electrolytic galvanized steel panels or aluminum
- ◆ Hardened, solvent-resistant, well-preserved and sanded old paint or factory paints.
- ◆ Areas filled with two-part polyester filling paste.
- ◆ Cleaned and sanded UP-GF surfaces, free of separating agents



#### Caution

*This filling paste may not be applied to PVB (acid-hardening) adhesive primers or one-part primers (for example, synthetic resin).*

*Application on thermoplastic or elastic coatings is also not possible.*

*Areas sanded through to the base surface (bare metal) are to be primed with Two-Part Wash Primer - LHV 043 000 A2- and then filled with Two-Part HS Performance Filler .*



#### Pre-treatment of base surfaces:

- Remove any grease and sand the surface.
- With UP-GF underbodies, clean components of any residual agents and sand the surface.

- Before reworking, apply a suitable cleaning agent to all base surfaces to ensure a clean and residue-free surface.

#### Processing

##### Mixture ratio:

- Add 5% Two-Part Hardener - LHA 841 000 A2- by volume.
- Working time: 20 to 30 minutes at +20 °C (68 °F)
- The reaction temperature must be at least +15 °C (59 °F)

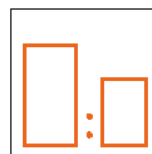
“Compliant” application type



P00-10037



P00-10038



P00-10024



P00-10029



- Set processing viscosity to +20 °C (68 °F) material temperature.
- Set spray nozzle to 2 to 2.5 mm (see manufacturer's information).
- Set spray pressure to 2 to 3 bar (29.01 to 43.51 psi) (see manufacturer's information).



P00-10036

- Five spray applications result in a coating density of 500-600 µm (coating densities of up to 1000 µm are possible).

#### Application type "painting"



#### Note

*For application type "painting", apply the material all at one time.*



P00-10032

#### Drying

Air dry at +20 °C (68 °F) room temperature:

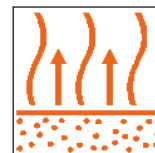
- Can be sanded after 2 hours



P00-10027

Forced drying:

- Flash-off time: 5 to 10 minutes.



P00-10026



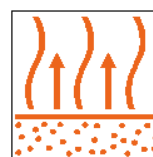
- Drying time of 30 to 35 minutes at an object temperature of +60 to 65 °C (140 to 149 °F).



P00-10027

#### Infrared drying:

- Flash-off time is at least 5 minutes



P00-10026

- Drying time 10 to 12 minutes, short-wave heater at 50 % power



#### Note

Temperature resistance up to +80 °C (176 °F).



P00-10028

#### Further processing

##### Dry-sanding:

- Dry-sand the pre-sanding with P120 - 220 grit sandpaper
- Dry-sand the final sanding with P240 - 360 grit sandpaper



#### Note

Use a suitable sanding machine and dust extraction to dry-sand.



P00-10040



## Reworking

- Rework with:
  - ◆ Two-Part Wash Primer - LHV 043 000 A2- (only for sanded-through areas)
  - ◆ Two-Part HS Filler
- Top coat finish with:
  - ◆ Water-based base paint, Two-Part HS Clear Coat and Two-Part HS Top Coat

## Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

## Characteristics

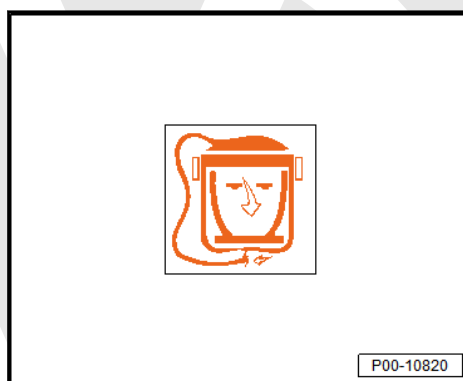
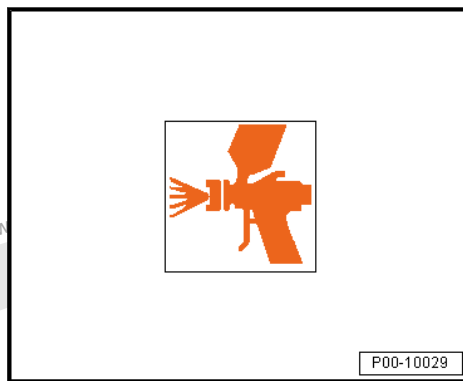
Delivery Viscosity	Thixotropic
Flashpoint:	Above 23 °C (73.4 °F)
VOC value: 2004/42/ IIB(b) (250)250	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 250 g (8.8 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 250 g (8.8 oz)/L.

## Storage

The guaranteed shelf life is 12 months from the production date. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).

## Storage Conditions

- Storage Temperature +20 °C (68 °F) (temperature should not exceed +30 °C (86 °F)).



## 3.3.5 Two-Part IR Premium Filling Paste

### Part names:

- ◆ Two-Part IR Premium Filling Paste - LSP 787 220 A1-
- ◆ Two-Part IR Premium Filling Paste - LSP 787 220 A2-
- ◆ Two-Part IR Premium Filling Paste - LSP 787 220 A3-

Edition 01/2017

### Product Description

The Two-Part IR Premium Filling Paste - LSP 787 220 A1/A2/A3- is a high-quality polyester filling paste used for vehicle paintwork repairs.



- ◆ For all conventional metallic base surfaces
- ◆ Also adheres very well to galvanized base surfaces.
- ◆ Sands well
- ◆ Non-porous and easily-shapeable.
- ◆ Well-suited for IR drying

### Application Instructions

#### Base surface

Suitable base surfaces:

- ◆ Steel Panel
- ◆ Galvanized sheet steel
- ◆ Aluminum
- ◆ Well-sanded factory or old paint
- ◆ Hardened and sealed two-part filler/two-part primers
- ◆ Cleaned and sanded UP-GF surfaces, free of separating agents

Refer to ➤ **"2.3 Fundamental Procedure when Processing Areas Sanded Through to Base Surface (Bare Metal)", page 9**



#### Caution

***This filling paste may not be applied to PVB (acid-hardening) adhesive primers or one-part primers (for example, synthetic resin).***

***Application on thermoplastic or elastic coatings is also not possible.***

#### Pre-treatment of base surfaces:

- Remove any grease and sand the surface.
- With UP-GF underbodies, clean components of any residual agents and sand the surface.
- Before reworking, apply a suitable cleaning agent to all base surfaces to ensure a clean and residue-free surface.

#### Processing

Application type:

- Apply filling paste.



P00-10037



P00-10031



#### Mixture ratio:

- Add 2 % by weight Two-Part Hardener - LVM 018 000 A1/A2- .



#### Note

*Avoid using excessive hardener paste, to prevent it from bleeding through, especially on daylight colors and light metallic colors.*

#### Curing Time:

- At +20 °C (68 °F) room temperature for approximately two to four minutes.

#### Reaction Temperature:

- Minimum +5 °C (41 °F)

#### Drying

##### Air Drying:

- Drying time at +20 °C (68 °F) room temperature for about 15 to 30 minutes.

##### Infrared drying:

##### Drying time:

- ♦ Short-wave heaters for two to three minutes (at 50 % power)

#### Sanding compatibility

In connection with the aforementioned drying time:

- Dry rough sand with P 80 - 120 grit sandpaper.
- Dry fine sand using P 180 - 240 grit sandpaper.



#### Note

*Temperature resistance up to +80 °C (176 °F)!*



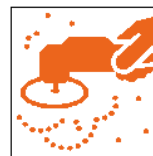
P00-10022



P00-10027



P00-10028



P00-10040





## Reworking

- ◆ Fine filling paste by itself.
- ◆ Rework fine filling paste with Two-Part Fine Filling Paste - LSP 784 002 A2- or with Two-Part Spray Filling Paste - ALN 788 007- (except on galvanized steel).
- ◆ Prime sanded-through areas and filled areas again with Two-Part Wash Primer - LHV 043 000 A2- and then fill with Two-Part HS Performance Filler.



P00-10029

## Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

## Characteristics

Delivery Vis- cosity	Pasty
Flashpoint:	Filling paste over 23 °C (73.4 °F)
VOC value: 2004/42/ IIB(b) (250)150	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 250 g (8.8 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 150 g (5.3 oz)/L.



P00-10820

## Storage

The guaranteed shelf life is 12 months from the production date. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).

## Storage Conditions

- Storage Temperature +20 °C (68 °F) (temperature should not exceed +30 °C (86 °F)).



P00-10050

## 3.3.6 Two-Part Epoxy Resin Scraper

### Definition:

- ◆ Two-Part Epoxy Resin Scraper - D 787 400 M2-

Edition, 03/2017

### Product Description

Two-Part Epoxy Resin Scraper is a quick hardening epoxy resin scraper for use on the vehicle body.

The mineral filled scraper (no contact corrosion) is special for the use of tin and filler paste for joints and seam areas.

The quick hardening and the easy working allow a cheaper application in the area of the body repair.



### Application areas

- ◆ Liquid tin filler
- ◆ Join filler
- ◆ Bonding of metals
- ◆ Paint carrier unit

### Properties

- ◆ Good adhesion on metal, aluminum and zinc
- ◆ Easy working (sanding, planing)
- ◆ Ideal paint carrier unit
- ◆ Easy to model, very strong
- ◆ Quick hardening
- ◆ No collapse or running

### Application Instructions

#### Base surface

Pre-treatment of base surfaces:

- Carefully grease the base surface and grind down to bare metal using P60 sandpaper.

- Clean the dirty surface once again and then remove any cleaning residue again.

### Processing

#### Application type

- Apply filling paste.



P00-10037



P00-10038



P00-10031



#### Mixture ratio:

- The two-part epoxy scraper is supplied with a closed two-part cartridge and does not require manual mixing. Before applying squeeze out the mixer material, until both components flow out evenly. Then unscrew the mixer. Press out the material until a uniform gray color is achieved. The first 5 cm of the pressed out material should not be used, because it could be incorrectly mixed.

#### Curing Time

- ◆ Pot life at +20 °C (68 °F) room temperature for approximately 30 minutes

#### Hardening

- ◆ 4 hours

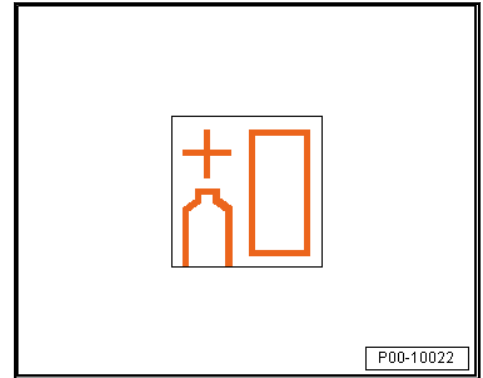
#### Recoating

- ◆ 1.5 to 2 hours

#### Drying

##### Air Drying:

- ◆ 4 hours



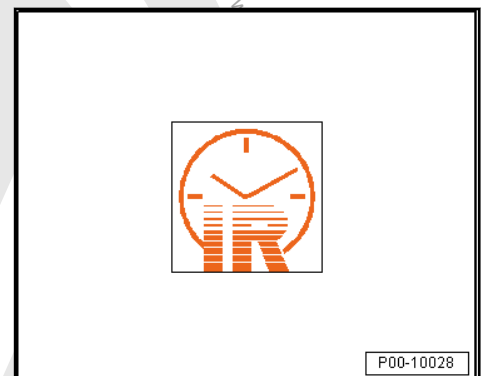
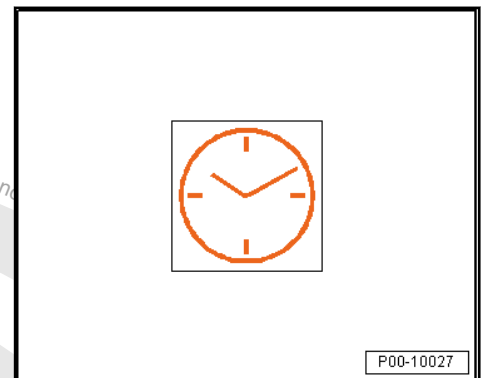
Dry using the short-wave IR heater.

- ◆ Hardening 1st step: 10 minutes at 45 °C (113 °F)
- ◆ Hardening 2nd step: 10 minutes at 85 °C (185 °F)
- ◆ Hardening 3rd step: let cool at room temperature 20 °C to 25 °C (68 °F to 77 °F)



#### Note

- ◆ Pay attention that the material is not heated above 100 °C (212 °F) when hardening.
- ◆ When hardening on edges and curvatures pay attention that there is a uniform hardener temperature. The device must be replaced if necessary.





### Sanding compatibility

The hardened and cooled material can be sanded with the body file or soft sandpaper (P80 grit).



P00-10042

### Personal Protective Equipment

- ◆ Note the safety data sheets
- ◆ Use only in well ventilated spaces
- ◆ Wear the personal protective equipment during application
- ◆ The use of a grinding dust extractor is recommended.

### Technical Data

Density	Approximately 1.55 g (0.1 oz)/cm <sup>3</sup>
Shore-D-Hardener at 20 °C (68 °F)	84
Processing temperature	+10 °C to +50 °C (50 °F to 122 °F)
Temperature resistance	-40 °C to +110 °C (-40 °F to 230 °F)



P00-10820

### Storage

The guaranteed shelf life is 12 months from the production date. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).

### Storage Conditions

- ◆ Store in a cool and dry place
- ◆ Storage Temperature +10 °C to +30 °C (50 °F to 86 °F)
- ◆ No direct sunlight



P00-10050

## 3.4 Primer Metal

⇒ ["3.4.1 One-Part Anti-Corrosion Wash Primer", page 92](#)

⇒ ["3.4.2 One-Part Wash Primer", page 96](#)

⇒ ["3.4.3 Two-Part Wash Primer", page 100](#)

### 3.4.1 One-Part Anti-Corrosion Wash Primer

#### Definition:

- ◆ One-Part Anti-Corrosion Wash Primer - ALN 002 003 10-



Edition 06/2011

## Product Description

One-part anti-corrosion primer is a zinc chromate-free, polyvinylbutyral-based, single-component product for vehicle repairs.

With its special pigment and binder composition it provides excellent protection against corrosion, outstanding adhesion and is also certified for welding. Nevertheless, this product non-conductive and therefore not suitable for spot welding.

For residual rust spots on corners and edges as well as bare-sanded areas, we recommend recoating using One-Part Anti-Corrosion Wash Primer - ALN 002 003 10- with a Two-Part HS Filler .

## Application Instructions

### Base surface

Suitable base surfaces:

- ◆ Cleaned and sanded, galvanized/electrolytically zinc sheet steel or soft aluminum
- ◆ Sanded factory primer
- ◆ Hardened, solvent-resistant, well-preserved and sanded old paint or factory paint (with the exception of thermoplastic paint)
- ◆ Surfaces prepared with two-part polyester products and then sanded very fine.

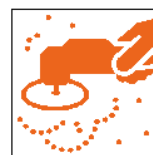
Pre-treatment of base surfaces:

- Carefully clean using Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .

- Dry-sand with rotary sander and dust extraction, P400-500 grit.



P00-10038



P00-10040



- Wet-sand with P800-1000 grit sandpaper. Thoroughly remove any potential rust spots and sand any transitions to old paint.



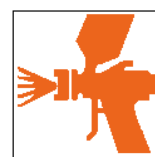
P00-10037

## Processing

Dilutable with:

- ◆ Two-Part Thinner - LVE 009 001 A5-
- ◆ Two-Part Thinner, Plus - LHA 014 000 A5-
- ◆ Two-Part Thinner, Special - LVM 009 200 A2/A5-

Application type “coat”



P00-10029

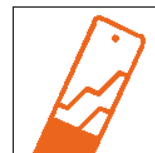
- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211



P00-10036

Adding 40 % thinner at +20 °C (68 °F) material temperature.

- Use a measuring stick to mix when pouring in the thinner.



P00-10023



Working viscosity 4 mm gravity feed spray gun "Compliant" and "HVLP":

DIN 4 mm: 18 to 20 seconds.

ISO 4 mm: 44 to 53 seconds.

- Set spray nozzle (see manufacturer's information): "Compliant" and "HVLP" to 1.3 to 1.4 mm.
- Set spray pressure (see manufacturer's information): "Compliant" to 1.5 to 3.0 bar (21.76 to 43.51 psi).

- Apply two coats.

- The prescribed layer thickness is 15 to 20 µm.

Application type "painting"



#### Note

- ◆ For application type "painting", apply the material all at one time and do this one to two times.
- ◆ This ensures that the delivery viscosity will be the same as the processing viscosity.

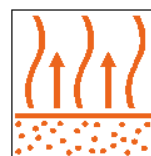
Flash-off time: at +20 °C (68 °F) room temperature for 15 to 25 minutes.



P00-10029



P00-10032



P00-10026



## Reworking

Recommended structure:

- ◆ Fill with Two-Part HS Filler . Refer to ➤ [“3.6 Filler”, page 106](#) .



### Caution

*Do not rework with polyester products.*

*Do not rework with epoxy products.*

*Do not directly rework with water-based base paint.*

*Do not apply to thermoplastic coatings.*

*We recommend the following three-layer structure:*

- ◆ *Prime with One-Part Anti-Corrosion Wash Primer - ALN 002 003 10-*
- ◆ *Insulate with Two-Part HS Filler*
- ◆ *Top coat finish*

*The three-layer structure is essential for galvanized base surfaces.*



P00-10029

## Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

## Characteristics

Delivery Viscosity	90 -100 seconds
Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/II B(c) (780)780	The EU limit for this product (product category IIB.c) in ready-to-use form is a maximum of 780 g (27.5 oz)/L volatile organic compounds. The VOC value of this product in ready-to-use form is a maximum of 780 g (27.5 oz)/L.



P00-10820

## Storage

The guaranteed shelf life is 24 months from production date.  
Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



P00-10050

## 3.4.2 One-Part Wash Primer

### Definition:

- ◆ One-Part Wash Primer - LVM 044 007 A2- , light gray
- ◆ One-Part Wash Primer - LVM 044 171 A2- , dark gray





Edition 08/2013

### Product Description

The one-part wash primer is a zinc chromate-free single-compound wash primer for all conventional metallic base surfaces.

- ◆ Suitable for all conventional metallic base surfaces
- ◆ VOC compliant and protects well against corrosion
- ◆ Easy handling (one-part material)
- ◆ Certified for welding.
- ◆ Available in light gray and dark gray

### Application Instructions

#### Base surface

Suitable base surfaces:

- ◆ Steel
- ◆ Cleaned and sanded, galvanized/electrolytically zinc sheet steel or soft aluminum
- ◆ Sanded factory primer (not on large areas of new parts that have been sanded and coated with CDC primer)
- ◆ Thoroughly sanded old primer or factory primer (excluding thermoplastic coating)
- ◆ Surfaces prepared with two-part polyester products and then sanded very fine.



#### Note

*Because of the wide variety of alloys and manufacturing processes for metals, the base surface must first be tested to ensure that the pre-treatment provides sufficient adhesion.*

Pre-treatment of base surfaces:

- Carefully clean using Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .



P00-10038



- Clean and sand factory or old paint, eliminate any potential rust areas, and sand transitions to old paint.



P00-10037

- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.



P00-10038

## Processing

Dilutable with:

- ◆ Two-Part Thinner - LVE 009 001 A5-
- ◆ Two-Part Thinner, Plus - LHA 014 000 A5-
- ◆ Two-Part Thinner, Special - LVM 009 200 A2/A5-
- ◆ Two-Part Thinner, Long - LVM 009 300 A2- (for large objects and high temperatures)

Application type "coat"



P00-10029

- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211 is the mixed viscosity.

Adding 50 % thinner at +20 °C (68 °F) material temperature.



P00-10036

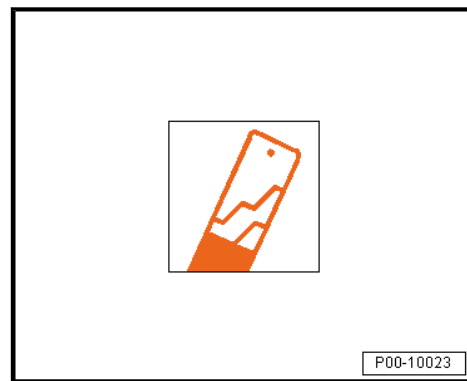


- Use a measuring stick to mix when pouring in the thinner.

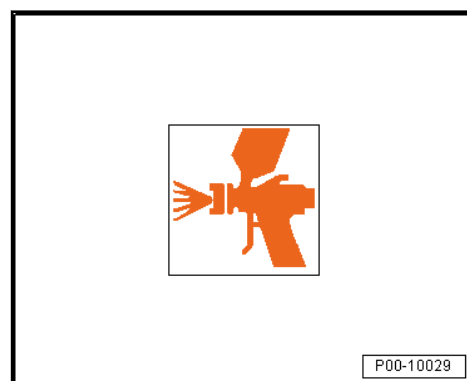
Working viscosity 4 mm gravity feed spray gun “Compliant” and “HVLP”:

DIN 4 mm: 18 to 20 seconds

ISO 4 mm: 36 to 45 seconds



- Set spray nozzle (see manufacturer's information): “Compliant” and “HVLP” to 1.3 to 1.5 mm.
- Set the spray pressure (see manufacturer's information): “Compliant” to 2.0 to 2.5 bar (29.01 to 36.26 psi).

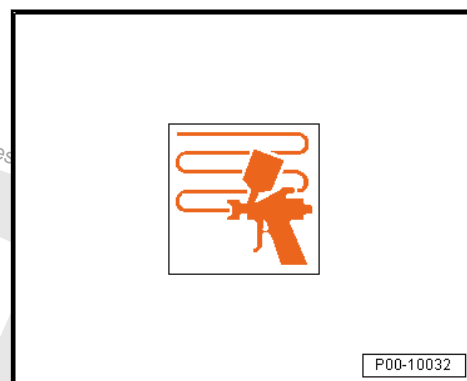


- Apply a coat when using as wash primer.
- The prescribed layer thickness is 10 to 15 µm.



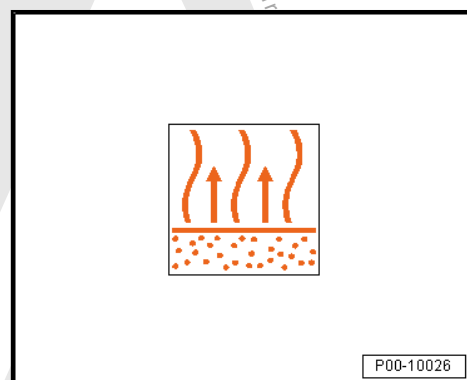
#### Note

*When insulating small, sanded through areas, use only water-based base paint or two-part HS top coat for the wet-in-wet and intermediate sanding processes on the One-Part Wash Primer - LVM 044 007 A2- / -LVM 044 171 A2-. Do not perform this action if the sanded-through area is not larger than 5.0 cm in diameter.*



Flash-off at +20 °C (68 °F) room temperature, rework again after:

- ◆ 10 to 15 minutes with Two-Part HS Filler .
- ◆ 20 to 30 minutes with Water-Based Base Paint (for small sanded-through areas only)
- ◆ 10 to 15 minutes with Two-Part HS Top Coat (for small sanded-through areas only)
- ◆ 45 to 60 minutes to start sanding





## Reworking

Use	Rework with
As wash primer	Two-Part HS Filler
As wash primer with intermediate sanding	Wet-sand with P 800-1000 grit sandpaper

Can be painted over with:

- ◆ Water-based base paint and two-part HS clear coat (for small sanded-through areas only)
- ◆ Two-part HS top coat (for small sanded-through areas only)



### Caution

**Do not rework with polyester products.**

**Do not apply to thermoplastic coatings.**

**Do not rework with epoxy products.**

**Do not rework with water-soluble products.**

**Do not dry-sand.**



P00-10029

## Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

## Characteristics

Delivery Viscosity	At least 60 seconds
Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/IIB(c) (780)760	The EU limit for this product (product category IIB:c) in ready-to-use form is a maximum of 780 g (27.5 oz)/L volatile organic compounds. The VOC value of this product in ready-to-use form is a maximum of 760 g (26.8 oz)/L.



P00-10820

## Storage

The guaranteed shelf life is 24 months from production date.  
Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



P00-10050

## 3.4.3 Two-Part Wash Primer

### Definition:

- ◆ Two-Part Wash Primer - LHV 043 000 A2-



Edition 10/2010

## Product Description

The two-part wash primer is a zinc chromate-free, phenol-free and acid-free two-component wash primer from our PVB system.

- ◆ Passivating properties provide excellent protection against corrosion.
- ◆ For metallic base surfaces, especially for aluminum and galvanized sheet steel
- ◆ Simple processing properties
- ◆ Olive gray

## Application Instructions

### Base surface

Suitable base surfaces:

- ◆ Bare sheet steel, cleaned and sanded
- ◆ Cleaned and sanded, galvanized/electrolytically zincd sheet steel or soft aluminum
- ◆ Sanded factory primer
- ◆ Thoroughly sanded old primer or factory primer (excluding thermoplastic coating)
- ◆ Surfaces prepared with two-part polyester products and then sanded very fine.

Pre-treatment of base surfaces:

- Carefully clean using Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .



P00-10038



P00-10037

- Clean and sand factory or old paint, eliminate any potential rust areas, and sand transitions to old paint.



- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.



P00-10038

## Processing

Mixture ratio:

- 1:1 by volume with Two-Part Additional Solution - LHA 004 000 A2-

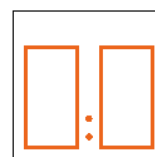
Curing Time:

- Adjustment for spraying 8 to 10 hours at +20 °C (68 °F)



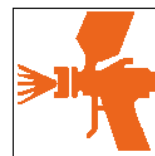
### Note

*Set material must be processed on the same day.*



P00-10084

Application type “coat”



P00-10029

- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211

Working viscosity 4 mm gravity feed spray gun “Compliant” and “HVLP”:

DIN 4 mm: 16 to 18 seconds

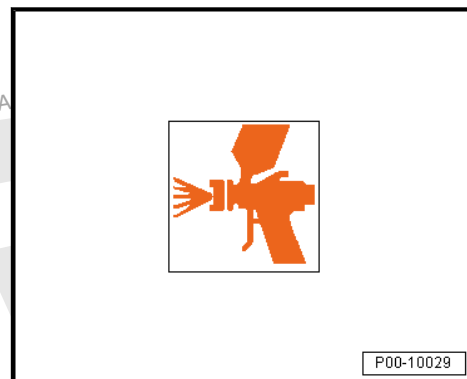


P00-10036




- Set spray nozzle (see manufacturer's information): "Compliant" 1.2 to 1.4 mm.
- Set spray nozzle (see manufacturer's information): "HVLP" 1.3 to 1.5 mm.
- Set the spray pressure (see manufacturer's information): "Compliant" to 2.0 to 2.5 bar (29.01 to 36.26 psi).
- Set the atomizing pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).

- The prescribed layer thickness is 8 to 12 µm.



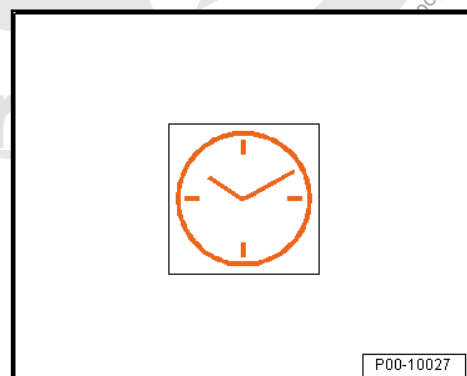
### Drying

Air dry at +20 °C (68 °F) room temperature, can be sprayed over after 30 minutes.



**WARNING**

*Due to possible adhesion impairment, forced drying and IR drying are not possible.*




### Reworking

Can be sprayed over with two-part HS filler at +20 °C (68 °F) after flash-off time.

Afterwards, can be painted over with:

- ◆ Water-based base paint and two-part HS clear coat
- ◆ Two-Part HS Top Coat

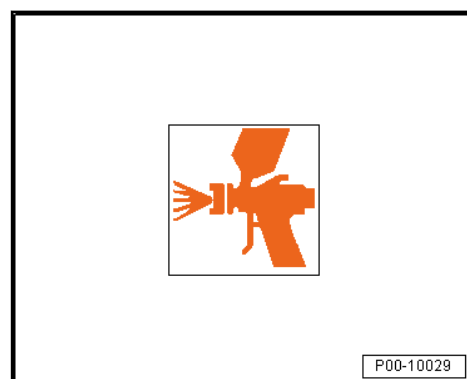


**Caution**

*Do not rework with polyester products, epoxy products or water soluble products.*

*Do not apply to thermoplastic coatings.*

*Do not rework directly with water-based base paint or two-part top coat.*



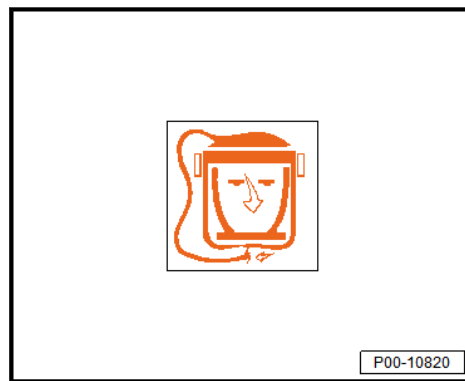


### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

### Characteristics

Delivery Viscosity	At least 60 seconds
Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/II B(c) (780)780	The EU limit for this product (product category IIB.c) in ready-to-use form is a maximum of 780 g (27.5 oz)/L volatile organic compounds. The VOC value of this product in ready-to-use form is a maximum of 780 g (27.5 oz)/L.

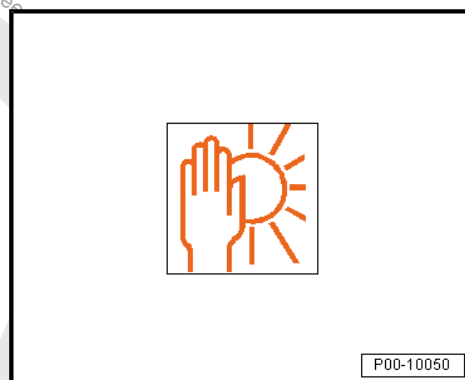


### Note

*The yield was calculated taking into account the recommended layer thickness and the procentual proportion of solid material (without thinner). The corresponding processing losses were not taken into account.*

### Storage

Guaranteed shelf life of 24 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



## 3.5 Plastic Primer

⇒ ["3.5.1 Bonding Agent", page 104](#)

### 3.5.1 Bonding Agent

#### Definition:

- ◆ Bonding Agent - LVM 823 000 A2 - .

#### Product Description

The Bonding Agent - LVM 823 000 A2- can be used directly on uncoated plastic. It offers excellent bonding on critical plastic components of passenger vehicles.

#### Characteristics:

- ◆ offers excellent bonding on exterior plastic components of passenger vehicles.
- ◆ can be used directly on degreased, uncoated plastic.
- ◆ is ready for use.
- ◆ Radar-compatible.

Painted plastic parts may not be cleaned with a high-pressure cleaner before six weeks have passed. The minimum distance between the nozzle and the object is 30 cm.





## Application Instructions

Suitable base surfaces:

- ◆ All standard plastic parts used on car exteriors (PP, EPDM, ABS, PC, PPO, PA, R-TPU, PBTP, PVC, PUR, PUR soft foam, UP-GF).

### Pre-treatment of base surfaces:

Before cleaning the plastic parts, temper them for 60 minutes at +60 °C to "sweat out" the separating agents.

- ◆ Use an ultra-fine sanding pad soaked in LVM 020 100 silicone remover for the pre-cleaning / use a towel wet with LVM 020 100 silicone remover for cleanup.
- ◆ Wipe the surface to loosen and remove impurities. Immediately wipe with a clean towel.
- ◆ Change the towels often. Do not use any dirty towels.
- ◆ Thoroughly remove all traces of separating agents.

- Set the spray nozzle (see manufacturer's information): "Compliant" 1.3 to 1.4 mm.
- Set the spray nozzle (see manufacturer's information): "HVLP" 1.3 to 1.4 mm.
- Set spray nozzle (see manufacturer's information): "Compliant" 1.2 to 1.3 mm.
- Set the atomizing pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).
- Set the spray pressure (see manufacturer's information): "Compliant" to 2.0 to 2.5 bar (29.01 to 36.26 psi).

### Application type "coat"

- Apply one to two coats.
- ◆ With intermediate drying time: 5 minutes.
- ◆ Final flash-off time: 10 to 15 minutes.

Air drying at +20 °C (68 °F) room temperature: 10 to 15 minutes

### Further Processing

Fill with:

- ◆ Can be sprayed over with two-part HS filler elasticized with two-part elastic additive ALZ 011 001.



P00-10038



P00-10029



P00-10032



P00-10027



### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

### Storage

The guaranteed shelf life is 24 months from production date.  
Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



P00-10820



P00-10050

## 3.6 Filler

⇒ [“3.6.1 Two-Part HS Vario Filler”, page 106](#)

⇒ [“3.6.2 Two-Part HS Premium Filler”, page 114](#)

⇒ [“3.6.3 Two-Part HS Performance Filler”, page 120](#)

⇒ [“3.6.4 Two-Part Plastic Adhesive Filler”, page 127](#)

⇒ [“3.6.5 Two-Part HS Wet-in-Wet Filler”, page 131](#)

⇒ [“3.6.6 Two-Part Base Filler, Pro”, page 138](#)

⇒ [“3.6.7 Two-Part HS Speed Filler”, page 152](#)

### 3.6.1 Two-Part HS Vario Filler

#### Definition:

- ◆ Two-Part HS Vario Filler - LGF 786 004 A4- , gray

Edition 02/2018

#### Product Description

The two-part vario filler is a high-quality, variable VOC compliant, acrylic-based two-part HS filler.

#### Characteristics:

- ◆ Can be used as sanding filler and as wet-in-wet filler
- ◆ Use with HS and VHS hardeners
- ◆ Has good insulation properties, even with thermoplastic old plastic
- ◆ Very nice paint finish



## Application Instructions

### Base surface

Suitable base surfaces:

- ◆ Sheet steel that has been cleaned, sanded and primed with Two-Part Wash Primer - LHV 043 000 A2- or One-Part Wash Primer - LVM 044 007/171 A2- (only for small sanded-through areas), galvanized/electrolytically zinc coated sheet steel or soft aluminum
- ◆ Fine or non-sanded, thoroughly cleaned, original factory primer.
- ◆ Cleaned and sanded, galvanized/electrolytically zinc coated sheet steel or soft aluminum
- ◆ Sanded factory paint or old paint (including thermoplastic coatings)
- ◆ Surfaces prepared with two-part polyester products and then sanded very fine.
- ◆ Cleaned and sanded UP-GF surfaces, free of separating agents

Pre-treatment of base surfaces:

- Carefully clean using Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .

- Then, sand.

- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.



P00-10038



P00-10037



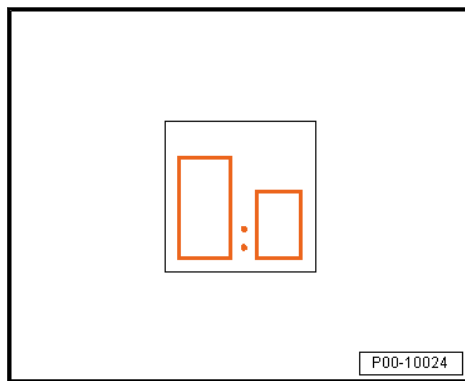
P00-10038



### Use with intermediate sanding

Mixing ratio 5:1 by volume with:

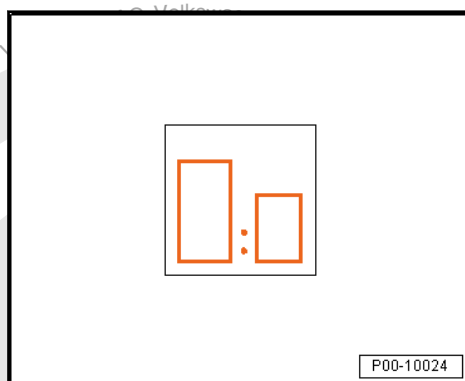
- ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5-
- ◆ Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3-
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-



Mixing ratio 3:1 by volume with:

- ◆ Two-Part HS Hardener, Short - LHA 021 004 A3-
- ◆ Two-Part HS Hardener - LHA 009 041 A3-
- ◆ Two-Part HS Hardener, Long - LHA 009 047 A3-
- ◆ Two-Part HS Hardener, Extra Long - LHA 009 048 A3-

For elastification. Refer to ➔ [page 113](#) .

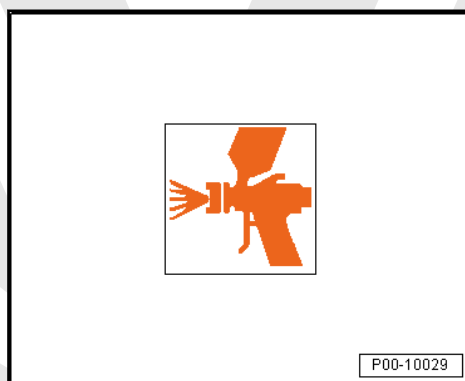


Working time/pot life:

- Ready to spray 30 to 60 minutes at +20 °C (68 °F) (depending on the hardener used)

Thinner:

- ◆ Two-Part Thinner - LVE 009 001 A5-
- ◆ Two-Part Thinner, Long - LVM 009 300 A2-
- ◆ Two-Part Thinner, Plus - LHA 014 000 A5-
- ◆ Two-Part Thinner, Special - LVM 009 200 A2/A5-



Application type "coat"





- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211

Working viscosity 4 mm gravity feed spray gun “Compliant” and “HVLP”:

DIN 4 mm: 20 to 25 seconds

Adding 10 to 15 % HS hardener or 10 to 20 % VHS hardener at +20 °C (68 °F) material temperature.

- Use a measuring stick to mix when pouring in the hardener.

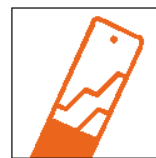
- Set spray nozzle (see manufacturer's information): “Compliant” 1.4 to 1.8 mm.
- Set spray nozzle (see manufacturer's information): “HVLP” 1.7 to 1.9 mm.
- Set spray pressure (see manufacturer's information): “Compliant” to 1.5 to 2.0 bar (21.76 to 29.01 psi).
- Set the atomizing pressure (see manufacturer's information): “HVLP” 0.7 bar (10.15 psi).
- Two spray applications are required to get a dry layer thickness of between 50 and 80 µm.
- Three spray applications are required to get a dry layer thickness of between 100 and 120 µm.
- The recommended dry layer thickness is between 50 and 120 µm.

#### Drying with intermediate sanding

Air dry at +20 °C (68 °F) room temperature, can be sanded overnight



P00-10036



P00-10023



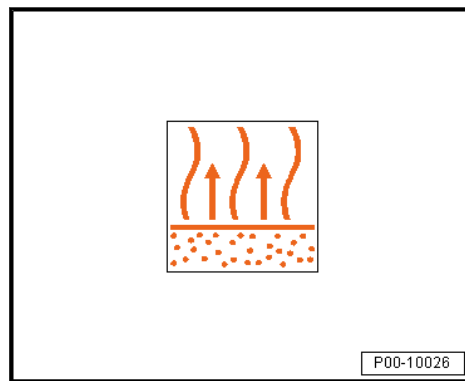
P00-10029



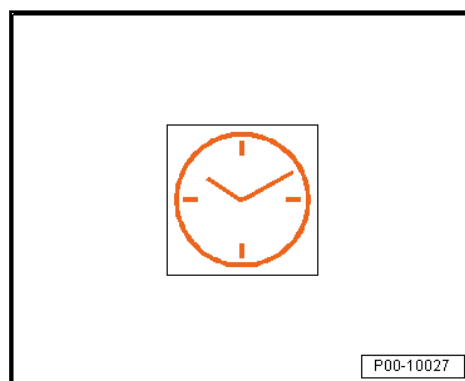
P00-10027



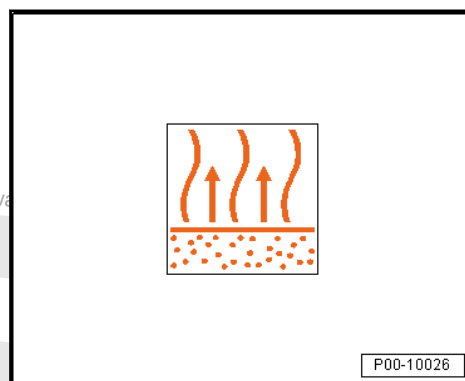
Final flash-off time with forced drying is a minimum of 5 to 10 minutes.



Forced drying at +60 to 65 °C (140 to 149 °F) object temperature is 25 to 45 minutes.

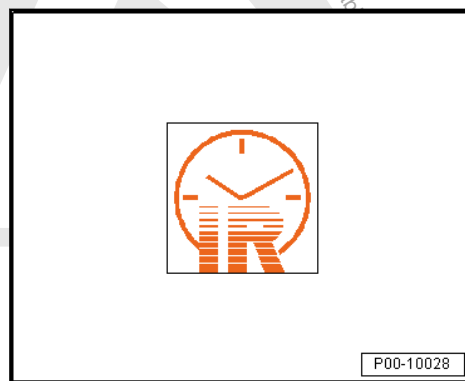


Final flash-off time for IR drying is a minimum of 5 to 10 minutes.



IR drying (depending on layer thickness), short-wave radiators:

- ◆ 2 minutes (at 50 % output)
- ◆ 8 minutes (at 100 % output)





### Further processing

- Dry-sand with rotary sander and dust extraction (sandpaper with P400-600 grit).



P00-10040

### Rework for intermediate sanding

Can be painted over with:

- ◆ Water-based base paint and two-part HS clear coat
- ◆ Two-Part HS Top Coat

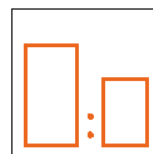


P00-10029

### Use as "wet-in-wet" filler

Mixing ratio 5:1 by volume with:

- ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5-
- ◆ Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3-
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-



P00-10024

Mixing ratio 3:1 by volume with:

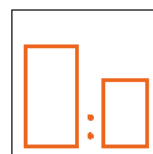
- ◆ Two-Part HS Hardener, Short - LHA 021 004 A3-
- ◆ Two-Part HS Hardener - LHA 009 041 A3-
- ◆ Two-Part HS Hardener, Long - LHA 009 047 A3-
- ◆ Two-Part HS Hardener, Extra Long - LHA 009 048 A3-

Working time/pot life:

- Ready to spray 30 to 60 minutes at +20 °C (68 °F) (depending on the hardener used)

Thinner:

- ◆ Two-Part Thinner - LVE 009 001 A5-
- ◆ Two-Part Thinner, Long - LVM 009 300 A2-
- ◆ Two-Part Thinner, Plus - LHA 014 000 A5-
- ◆ Two-Part Thinner, Special - LVM 009 200 A2/A5-



P00-10024



Application type "coat"



P00-10032

- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211

Working viscosity 4 mm gravity feed spray gun "Compliant" and "HVLP":



P00-10036

DIN 4 mm: 16 to 18 seconds



P00-10029

Adding 20 to 25 % HS hardener or 30 % VHS hardener at +20 °C (68 °F) material temperature

- Use a measuring stick to mix when pouring in the hardener.



P00-10023



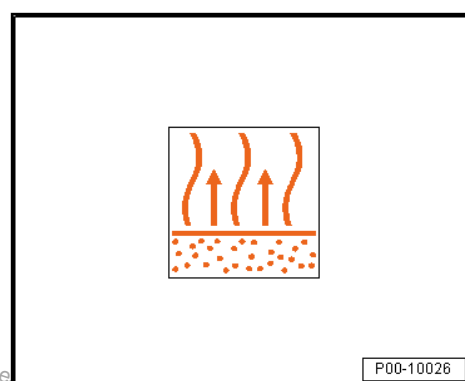
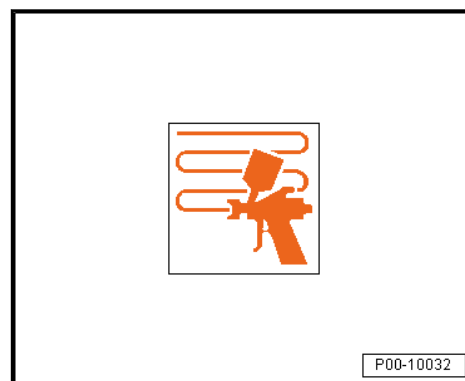


- Set the spray nozzle (see manufacturer's information): "Compliant" 1.3 to 1.4 mm.
- Set the spray nozzle (see manufacturer's information): "HVLP" 1.3 to 1.4 mm.
- Set spray pressure (see manufacturer's information): "Compliant" to 1.5 to 2.0 bar (21.76 to 29.01 psi).
- Set the atomizing pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).
- The recommended dry layer thickness is between 25 and 30 µm. One to two spray applications are required to get this dry layer thickness.

#### "Wet-in-wet" use

Flash-off time before applying top coat at +20 °C (68 °F) room temperature:

- ◆ 15 to 20 minutes up to a maximum of 90 minutes for two-part HS top coat
- ◆ 25 to 30 minutes up to a maximum of 90 minutes for water-based base paint
- ◆ 30 to 35 minutes up to a maximum of 90 minutes for Aqua premium water-based base paint



#### Reworking as wet-in-wet filler

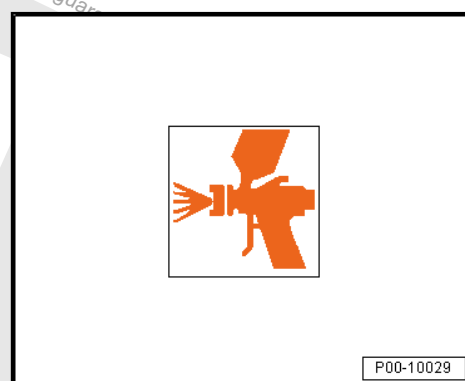
Can be painted over with:

- ◆ Water-based base paint and two-part HS clear coat
- ◆ Two-Part HS Top Coat

#### Special Instructions

Elastification for rigid and semi-rigid plastics:

- ◆ The base material must first be mixed with 15 % Two-Part Elastic Additive ALZ 011 001- . 3:1 mixing ratio for VHS hardener and 20% thinner, 2:1 mixing ratio for HS hardener with 20 % thinner.
- ◆ The flash-off time before applying the water-based base paint / Two-Part HS Top Coat increases to 30 to 45 minutes.
- ◆ Any faults in the base surface can be filled with two-part polyester filler paste. After drying and intermediate sanding, insulate the filler patches with two-part HS vario filler.
- ◆ In order to achieve the best surface finish for vehicle painting, we recommend the filler be sanded after it dries overnight.
- ◆ Do not use the wet-in-wet process on thermoplastic factory paint, and if possible let the filler air-dry overnight before sanding it.
- ◆ When air drying, a minimum of +15 °C (59 °F) is recommended.



#### Caution

*Allow for a flash-off time of 30 to 40 minutes before applying the base paint/two-part top coat series.*

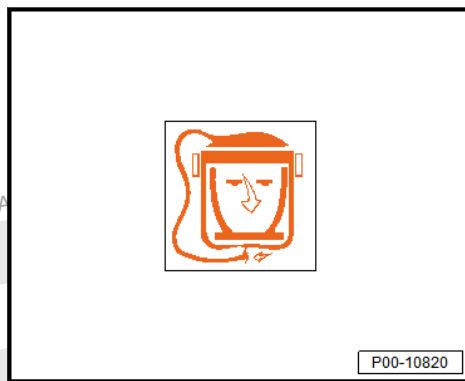


#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

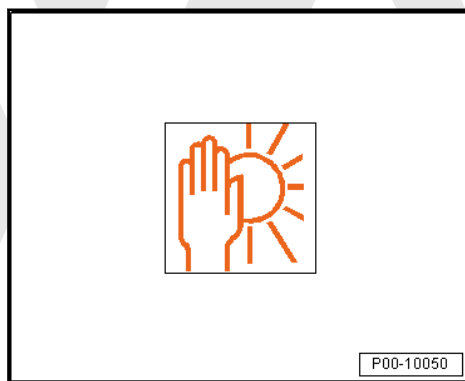
#### Characteristics

Delivery Viscosity	Thixotropic
Flashpoint:	Above 23 °C (73.4 °F)
VOC value: 2004/42/IIIB (c) (540) 540	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 540 g (19 oz)/L volatile organic compounds. The VOC value of this product in ready-to-use form is a maximum of 540 g (19 oz)/L.



#### Storage

The guaranteed shelf life is 24 months from production date.  
Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



### 3.6.2 Two-Part HS Premium Filler

#### Definition:

- ◆ Two-Part HS Premium Filler - LVM 013 171 A4- , dark gray
- ◆ Two-Part HS Premium Filler - LVM 013 173 A4- , medium gray
- ◆ Two-Part HS Premium Filler - LGF 013 007 A4- , light gray
- ◆ Two-Part HS Premium Filler - LGF 013 100 A4- , white
- ◆ Two-Part HS Premium Filler - LGF 013 190 A4- , coal

Edition 02/2018

#### Product Description

These two-part premium fillers are high-quality two-part HS acrylic-resin-based fillers.

#### Characteristics:

- ◆ Very long working time
- ◆ Optimal and stable processing properties
- ◆ Sands well
- ◆ Great stability under load
- ◆ High yield
- ◆ Excellent high-build characteristics
- ◆ Excellent paint finish



## Application Instructions

### Base surface

Suitable base surfaces:

- ◆ Sheet steel that has been cleaned, sanded and primed with Two-Part Wash Primer - LHV 043 000 A2- or One-Part Wash Primer - LVM 044 007/171 A2- (only for small sanded-through areas), galvanized/electrolytically zinc coated sheet steel or soft aluminum
- ◆ Fine or non-sanded, thoroughly cleaned, original factory primer.
- ◆ Sanded factory paint or old paint (including thermoplastic coatings)
- ◆ Surfaces prepared with two-part polyester products and then sanded very fine.
- ◆ Cleaned and sanded UP-GF surfaces, free of separating agents

Pre-treatment of base surfaces:

- Carefully clean using Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .

- Then, sand.

- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.



P00-10038



P00-10037



P00-10038



## Processing

Mixing ratio 4:1 by volume with:

- ◆ Two-Part HS Hardener - LHA 009 041 A3-
- ◆ Two-Part HS Hardener, Short - LHA 021 004 A3-
- ◆ Two-Part HS Hardener, Extra Short - LHA 009 046 A2-
- ◆ Two-Part HS Hardener, Long - LHA 009 047 A3-
- ◆ Two-Part HS Hardener, Extra Long - LHA 009 048 A3-

Mixing ratio 7:1 by volume with:

- ◆ Two-Part VHS Hardener, Short - LHA 009 050 A2-
- ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5-
- ◆ Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3-
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-
- ◆ Two-Part VHS Performance Hardener - LVM 009 038 A2-
- ◆ Two-Part VHS Performance Hardener, Long - LVM 009 039 A2-

For elastification. Refer to ➤ [page 119](#) .

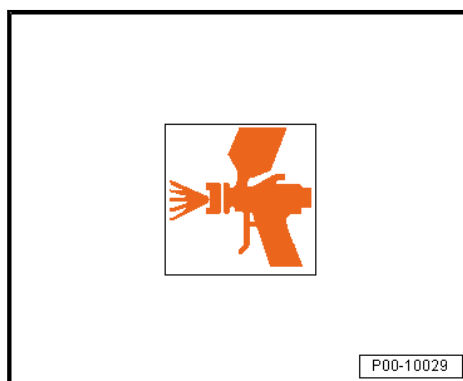
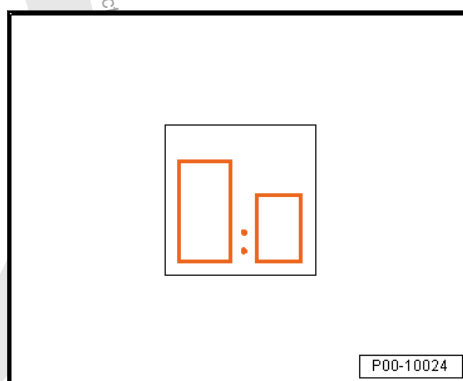
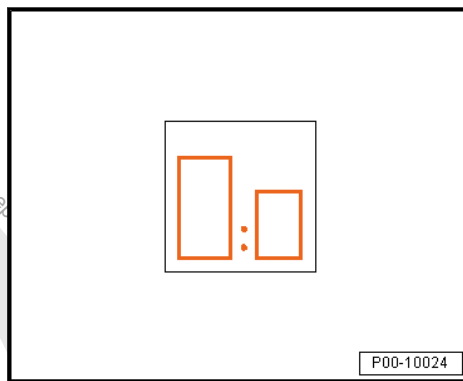
Working time/pot life:

- Ready to spray 90 to 120 minutes at +20 °C (68 °F) (depending on the hardener used).

Thinner:

- ◆ Two-Part Thinner - LVE 009 001 A5-
- ◆ Two-Part Thinner, Long - LVM 009 300 A2-
- ◆ Two-Part Thinner, Plus - LHA 014 000 A5-
- ◆ Two-Part Thinner, Special - LVM 009 200 A2/A5-

Application type "coat"





- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211

Working viscosity 4 mm gravity feed spray gun “Compliant” and “HVLP” is the mixed viscosity.

Adding 10 % VHS hardener at +20 °C (68 °F) material temperature

Adding HS hardener is not required, but up to 10 % is possible.

- Use a measuring stick to mix when pouring in the hardener.

- Set spray nozzle (see manufacturer's information): “Compliant” 1.4 to 1.7 mm.
- Set spray nozzle (see manufacturer's information): “HVLP” 1.4 to 1.7 mm.
- Set spray nozzle (see manufacturer's information): “Compliant” 1.8 to 2.2 bar (26.11 to 31.91 psi).
- Set the atomizing pressure (see manufacturer's information): “HVLP” 0.7 bar (10.15 psi).

- Three spray applications are required to get a dry layer thickness of between 80 and 300 µm.

When air drying, the maximum dry layer thickness is 300 µm.

When forced drying, the maximum dry layer thickness is 250 µm.

When IR drying (white and light gray), the maximum dry layer thickness is 200 µm.

When IR drying (black), the maximum dry layer thickness is 180 µm.

The recommended dry layer thickness is between 80 and 200 µm.



P00-10036



P00-10023



P00-10029



P00-10032



## Drying

The material can be sanded after 3 to 4 hours (layer thickness of 80 to 150 µm after air drying at +20 °C (68 °F) room temperature).

If the applied layer thickness is between 150 and 300 µm, the material should be allowed to dry over night and then sanded.

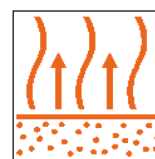
The final flash-off time when forced drying is than reached when the surface is matte.

Forced drying at +60 to 65 °C (140 to 149 °F) object temperature for 30 to 40 minutes for a layer thickness of between 80 and 150 µm; 40 minutes for a layer thickness of between 150 and 250 µm

The final flash-off time when IR drying is than reached when the surface is matte.



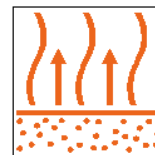
P00-10027



P00-10026



P00-10027



P00-10026



When IR drying (depending on layer thickness), use the short-wave radiator for 5 minutes at 50 % power and 15 minutes at 100 % power



P00-10028

### Further processing

- Dry-sand with rotary sander and dust extraction, P360-500 grit sandpaper.



P00-10040

- Wet-sand with P800-1000 grit sandpaper



P00-10041

### Reworking

Can be painted over with:

- ◆ Water-based base paint and two-part HS clear coat
- ◆ Two-Part HS Top Coat

### Special Instructions

Elastification for rigid and semi-rigid plastics:

- ◆ The base material must first be mixed with 15 % Two-Part Elastic Additive - ALZ 011 001- . 3:1 mixing ratio for HS hardener without thinner, 4:1 mixing ratio for VHS hardener with 5 % thinner.
- ◆ Any faults in the base surface can be filled with two-part polyester filler paste. After drying and intermediate sanding, insulate the filler patches with two-part HS premium filler.
- ◆ The best insulating effect, even with critical surfaces, is achieved with a medium layer of 80 to 120 µm in two spray passes, with air-drying overnight, or oven or IR drying. With critical surfaces, fine preparation is required and the parts must be evenly filled.



P00-10029

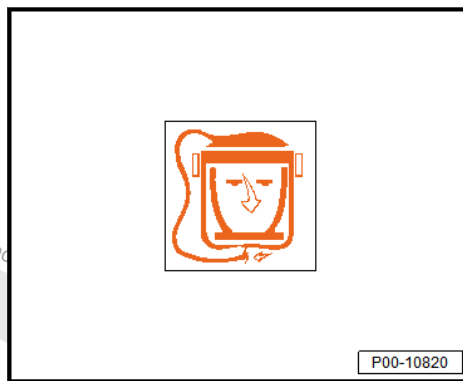


### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

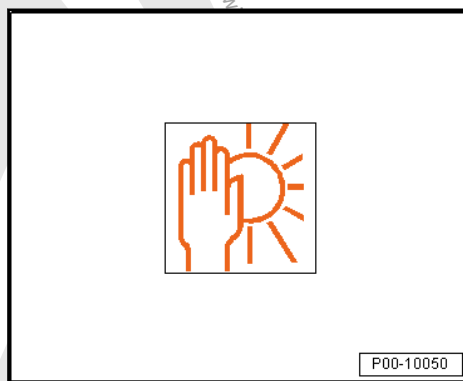
### Characteristics

Delivery Viscosity	Thixotropic
Flashpoint:	Above 23 °C (73.4 °F)
VOC value: 2004/42/IIB (c) (540) 540	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 540 g (19 oz)/L volatile organic compounds. The VOC value of this product in ready-to-use form is a maximum of 540 g (19 oz)/L.



### Storage

The guaranteed shelf life is 24 months from production date. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



## 3.6.3 Two-Part HS Performance Filler

### Definition:

- ◆ Two-Part HS Performance Filler - LVM 014 100 A4- , white
- ◆ Two-Part HS Performance Filler - LVM 014 173 A4- , dark gray
- ◆ Two-Part HS Performance Filler - LVM 014 190 A4- , coal

Edition 02/2018

### Product Description

These two-part performance fillers are high-quality two-part HS acrylic-resin-based fillers.

### Characteristics:

- ◆ Dries quickly
- ◆ Very good spray mist characteristics
- ◆ Great stability under load
- ◆ Sands very well
- ◆ High solid content provides a high yield

### Application Instructions

#### Base surface

#### Suitable base surfaces:

- ◆ Sheet steel that has been cleaned, sanded and primed with Two-Part Wash Primer - LHV 043 000 A2- or One-Part Wash Primer - LVM 044 ... A2- (only for small, sanded-through areas), galvanized/electrolytically zinc coated sheet steel or soft aluminum





- ◆ Fine or non-sanded, thoroughly cleaned, original factory primer.
- ◆ Sanded factory paint or old paint (except TPA)
- ◆ Surfaces prepared with two-part polyester products and then sanded very fine.
- ◆ Cleaned and sanded UP-GF surfaces, free of separating agents

Pre-treatment of base surfaces:

- Carefully clean using Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .



- Then, sand.



- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.



**Note**

*Stirring the Two-Part HS Performance Filler - LVM 014 ...- in the mixer is recommended.*





## Processing

Mixing ratio 5:1 by volume with:

- ◆ Two-Part VHS Performance Hardener - LVM 009 038 A2-
- ◆ Two-Part VHS Performance Hardener, Long - LVM 009 039 A2-
- ◆ (for very high technological resistance)



### Note

- ◆ *Measuring by weight is possible with the Wizard Plus.*
- ◆ *Please observe the country-specific explosion protection regulations.*

For elastification. Refer to ➔ [page 126](#) .

Working time/pot life:

- Ready to spray 45 to 75 minutes at +20 °C (68 °F) (depending on the hardener and thinner used)

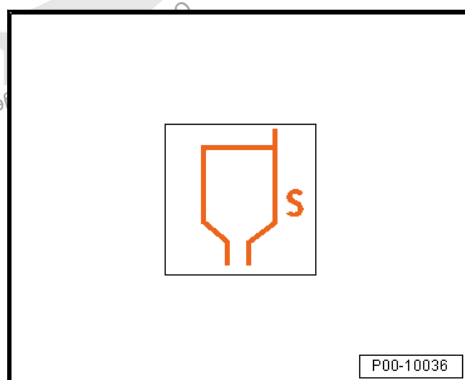
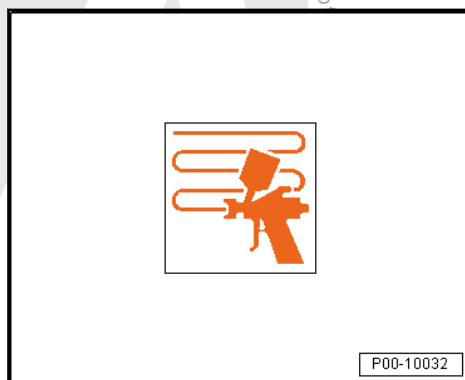
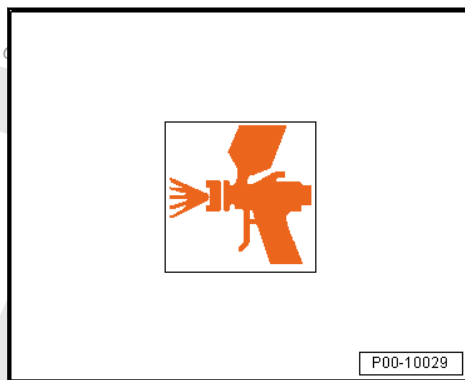
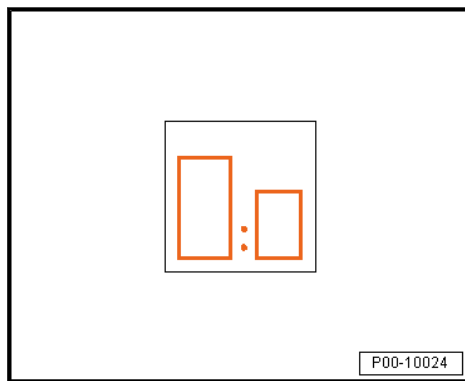
Thinner:

- ◆ Two-Part Thinner - LVE 009 001 A5-
- ◆ Two-Part Thinner, Long - LVM 009 300 A2-
- ◆ Two-Part Thinner, Plus - LHA 014 000 A5-
- ◆ Two-Part Thinner, Special - LVM 009 200 ...-

Application type "coat"

- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211

Working viscosity 4 mm gravity feed spray gun "Compliant" and "HVLP" is the mixed viscosity.





Adding 10 to 15% thinner at +20 °C (68 °F) material temperature

- Use a measuring stick to mix when pouring in the thinner.



P00-10023

- Set spray nozzle (see manufacturer's information): "Compliant" 1.6 to 1.8 mm.
- Set spray nozzle (see manufacturer's information): "HVLP" 1.7 to 1.9 mm.
- Set spray pressure (see manufacturer's information): "Compliant" to 1.5 to 2.0 bar (21.76 to 29.01 psi).
- Set the atomizing pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).



P00-10029

- One to three spray applications (with intermediate flash-off time) are required to get the recommended dry layer thickness of between 60 and 250 µm.



P00-10032

#### Air Drying:

The material can be sanded after 2 to 3 hours (layer thickness of 60 to 150 µm after air drying at +20 °C (68 °F) room temperature).

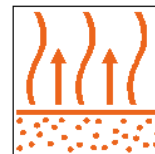
If the applied layer thickness is between 150 and 250 µm, the material should be allowed to dry over night and then sanded.



P00-10027



Final flash-off time with forced drying is a minimum of 5 to 15 minutes.



P00-10026

Forced drying:

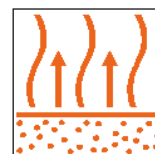
Drying time at +60 to 65 °C (140 to 149 °F) object temperature for 15 to 20 minutes for a layer thickness of between 60 and 150 µm; 25 minutes for a layer thickness of between 150 and 250 µm



P00-10027

Infrared drying:

Final flash-off time for IR drying is a minimum of 5 to 10 minutes.



P00-10026

Drying time with 60-250 µm layer thickness 10 minutes (of these, dry for 2 minutes at 70 °C (158 °F) and 8 minutes at maximum 90 °C (194 °F)).



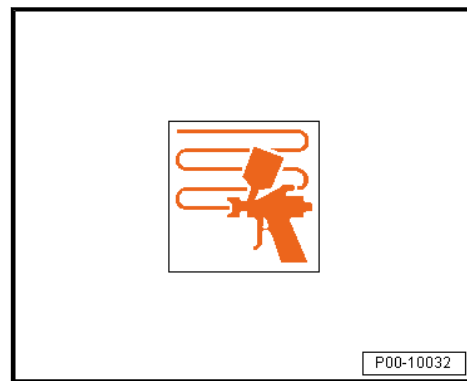
P00-10028



### Use of two-part HS performance filler under filling paste

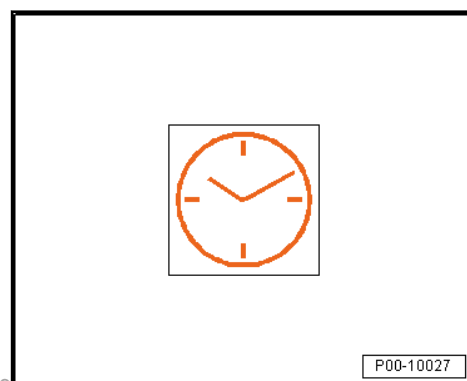
Application type "coat"

- One to two spray applications (with intermediate flash-off time) are required to get the recommended dry layer thickness of maximum 120 µm



Forced drying:

Drying time at +60 °C (140 °F) object temperature maximum  
120 µm 45 minutes



Infrared drying:

Drying time with maximum 120 µm layer thickness 17 minutes  
(of these, dry for 2 minutes at 70 °C (158 °F) and 15 minutes at  
maximum 90 °C (194 °F)).



Filler sanding:

In connection with the aforementioned drying time:

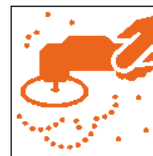
- Dry-sand the filler by hand with P180-220 grit sandpaper.





### Further processing

- Dry-sand with rotary sander and dust extraction (sandpaper with P400-600 grit).



P00-10040

- Wet-sand with P800-1000 grit sandpaper



P00-10041

### Reworking

Can be painted over with:

- ◆ Water-based base paint and two-part HS clear coat
- ◆ Two-Part HS Top Coat

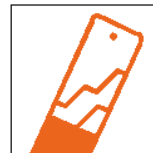


P00-10029

### Special Instructions

Elastification for rigid and semi-rigid plastics:

- ◆ The base material must first be mixed with 15 % Two-Part Elastic Additive - ALZ 011 001- . 4:1 mixing ratio for VHS performance hardeners and 10 % thinner.
- ◆ Any faults in the base surface can be filled with two-part polyester filler paste. After drying and intermediate sanding, insulate the filler patches with two-part VHS performance filler.
- ◆ The best insulating effect, even with critical surfaces, is achieved with a medium layer of 80 to 120 µm in two spray passes, with air-drying overnight, or oven or IR drying. With critical surfaces, fine preparation is required and the parts must be evenly filled.
- ◆ When air drying, a minimum of +15 °C (59 °F) is recommended.



P00-10023

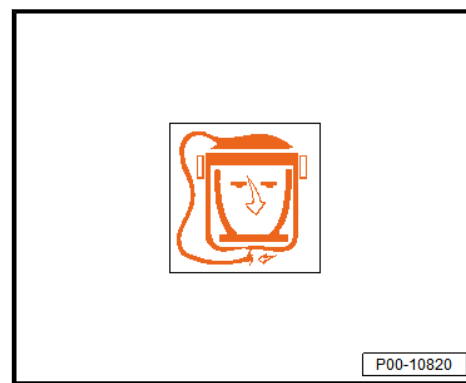


## Personal Protective Equipment

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

## Characteristics

Delivery Viscosity	Thixotropic
Flashpoint:	Above 23 °C (73.4 °F)
VOC value: 2004/42/IIB (c) (540) 540	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 540 g (19 oz)/L volatile organic compounds. The VOC value of this product in ready-to-use form is a maximum of 540 g (19 oz)/L.

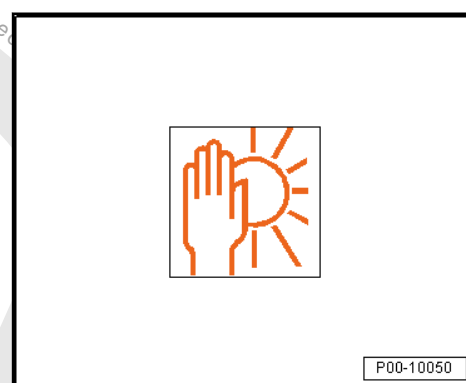


## Storage

The guaranteed shelf life is:

- ◆ Two-Part HS Performance Filler - LVM 014 ...- 24 months from production date.
- ◆ Two-Part VHS Performance Hardener - LVM 009 038 A2- 12 months from production date.
- ◆ Two-Part VHS Performance Hardener, Long - LVM 009 039 A2- 36 months from production date.

Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



## 3.6.4 Two-Part Plastic Adhesive Filler

### Definition:

- ◆ Two-Part Plastic Adhesive Filler - LKF 696 009 A2- , white
- ◆ Two-Part Plastic Adhesive Filler - LKF 696 040 A2- , black

Edition 08/2013

### Product Description

The two-part synthetic adhesion filler is a high-quality two-part primer filler for plastic parts.

Characteristics:

- ◆ Adhesion on all standard vehicle plastic parts
- ◆ Can be used wet-in-wet
- ◆ Efficient coating system
- ◆ Easy to handle
- ◆ Very long working time

### Application Instructions

#### Base surface

Suitable base surfaces:

- ◆ All standard plastic parts used on car exteriors
- ◆ PP, PP/EPDM, ABS, SAN, PC, PA, PUR-RIM, R-TPU, TPO, PBTP, PVC
- ◆ PUR, PUR soft foam
- ◆ UP-GF



#### Pre-treatment of base surfaces:

The base surface must be free of separating agents.

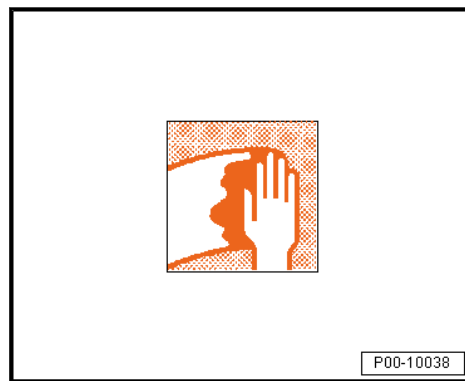
Before cleaning the plastic parts, temper them for 60 minutes at +60 °C to "sweat out" the separating agents.

- Clean using Antistatic Plastic Cleaner - LVM 001 001 A2- or a milder Silicone Remover, Long - LVM 020 100 A5- .



#### Note

- ♦ *The effort needed for cleaning depends on the type and quantity of the separating agent used. We recommend using a sanding pad to help cleaning*
- ♦ *Let the thinner evaporate (for example, air-drying overnight at room temperature or 30-to 40 minutes at +60 °C).*
- Before applying the adhesive filler, lightly clean again using Antistatic Plastic Cleaner - LVM 001 001 A2- or Silicone Remover, Long - LVM 020 100 A5- (antistatic effect).



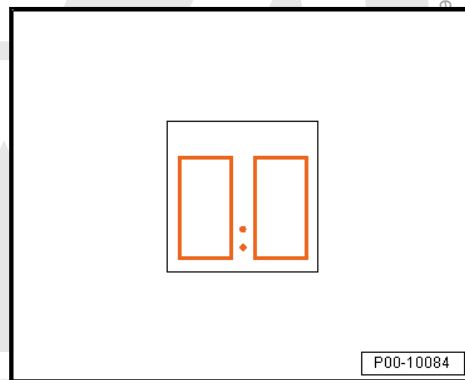
#### Processing

Thinner:

- Do not add any thinner!

Mixture ratio:

- 1:1 by volume with Two-Part Adhesive Filler Hardener - LHA 005 000 A2- .



Working time/pot life:

- Adjustment for spraying 7 to 9 hours at +20 °C (68 °F)



#### Note

*Do not add any thinner! The material can be sprayed after adding the hardener.*







## Application type "coat"

- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211

Working viscosity 4 mm gravity feed spray gun "Compliant" and "HVLP":

DIN 4 mm: 16 to 18 seconds

ISO 4 mm: 37 to 45 seconds.

- Set the spray nozzle (see manufacturer's information): "Compliant" 1.3 to 1.4 mm.
- Set spray nozzle (see manufacturer's information): "HVLP" 1.4 to 1.5 mm.
- Set the spray pressure (see manufacturer's information): "Compliant" to 2.0 to 2.5 bar (29.01 to 36.26 psi).
- Set the atomizing pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).
- Apply an application (apply a thin application and then a normal application after that).
- The recommended dry layer thickness is between 25 and 30 µm.



P00-10032



P00-10036



P00-10029



P00-10032



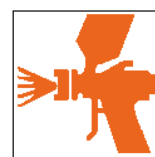
## Drying

Air dry at +20 °C (68 °F) room temperature, can be sprayed over after 15 to 20 minutes



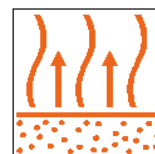
P00-10027

## Reworking



P00-10029

After a flash-off time of 15 to 20 minutes (up to a maximum of 24 hours), spray on a suitable top coat wet-in-wet at +20 °C (68 °F).



P00-10026



### Note

- ◆ If needed, the two-part plastic adhesive filler can be lightly sanded with P 800-1000 grit wet sandpaper after drying for 30 minutes (at +60 °C (140 °F) object temperature) or after two hours (+20 °C (68 °F) room temperature).
- ◆ Any faults in the base surface can be filled in with Two-Part Fine Filling Paste - LSP 784 002 A2- after the two-part plastic adhesive filler has dried.
- ◆ Filler patches must be insulated with two-part plastic adhesive filler before applying the top coat.

Afterwards, can be painted over with:

- ◆ Water-based base paint and two-part HS clear coat
- ◆ Two-Part HS Top Coat



### WARNING

**Painted plastic parts may not be cleaned with a high-pressure cleaner before six weeks have passed. The minimum distance between the nozzle and the object is 30 cm.**

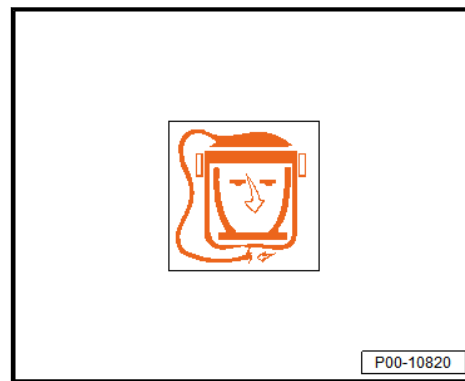


#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

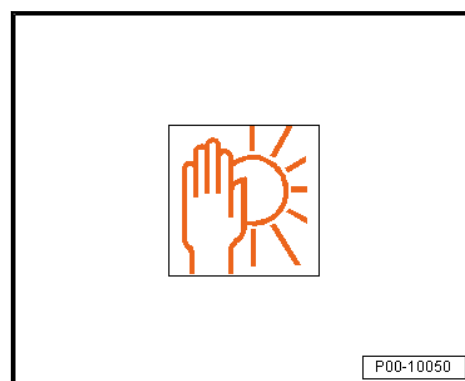
#### Characteristics

Delivery Vis- cosity	Two-Part Adhesive Filler Hardener	11 seconds
	Two-Part Plastic Adhesive Filler	100 seconds
Flash- point:	above +23 °C (73.4 °F)	



#### Storage

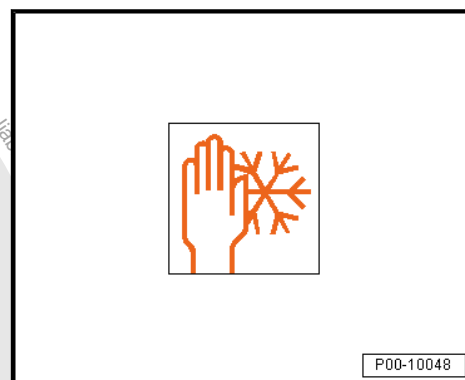
The guaranteed shelf life is 24 months from production date.  
Use no later than the date indicated on the label and store in  
the closed original container at +20 °C (68 °F).



#### Storage Conditions

The prescribed storage temperature for the two-part plastic ad-  
hesive filler is +20 °C (68 °F).

The prescribed storage temperature for the two-part adhesive  
filler hardener is +20 °C (68 °F) (not to fall below +5 °C (41 °F)).  
If exposed to frost, the hardener should be rewarmed to +20 °C  
(68 °F). Now it is suitable for use.



### 3.6.5 Two-Part HS Wet-in-Wet Filler

#### Definition:

- ◆ Two-Part HS Wet-in-Wet Filler - LVM 013 008 A4- , light gray
- ◆ Two-Part HS Wet-in-Wet Filler - LVM 013 905 A4- , black

#### Edition 02/2018

#### Product Description

The Two-Part HS Wet-In-Wet Filler (Light Gray) is a high-quali-  
ty, VOC compliant, two-part HS wet-in-wet acrylic resin-based  
filler.

- ◆ Suitable for all conventional plastic base surfaces on a pas-  
senger vehicle
- ◆ General short waiting period before painting over with water-  
based paints (wet-in-wet)
- ◆ Top coat gloss is very good
- ◆ Available colors: dark gray and black



## Application Instructions

### Base surface

Suitable base surfaces:

- ◆ Sheet steel, galvanized/electrolytically zined sheet steel or soft aluminum that has been cleaned, sanded and primed with Two-Part Wash Primer - LHV 043 000 A2-
- ◆ Fine or non-sanded, thoroughly cleaned, original factory primer.
- ◆ Thoroughly sanded factory paint or old paint
- ◆ Surfaces prepared with two-part polyester products and then sanded very fine.
- ◆ In combination with Plastic Additive - LVM 035 120 A2- on all standard plastic vehicle exterior parts (PP, PP/EPDM, ABS, SAN, PC, PA, PUR-RIM, R-TPU, TPO, PBTP, PVC, PUR, PUR soft foam and UP-GF).

Pre-treatment of base surfaces:

- Carefully clean using Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .

- Then, sand.

- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.



P00-10038



P00-10037



P00-10038



#### Pre-treatment of base surfaces on plastic parts:

On non-factory primed plastic parts the Glazing Bonding Agent - ALO 822 000 10- must not be damaged.

The base surface must be free of separating agents. Before cleaning the plastic parts, temper them for 60 minutes at +60 °C to sweat out the separating agents.

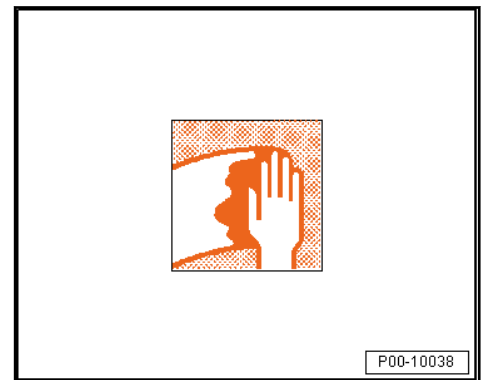
- Clean using the Antistatic Plastic Cleaner - LVM 001 001- or Silicone Remover, Long - LVM 020 100- .

The effort needed for cleaning depends on the type and quantity of the separating agent used.

For example, use Sandpaper - 3M 7448- or sandpaper from a comparable manufacturer to assist in cleaning.

Let the thinner evaporate, for example air-drying overnight or for 30 to 40 minutes at +60 °C.

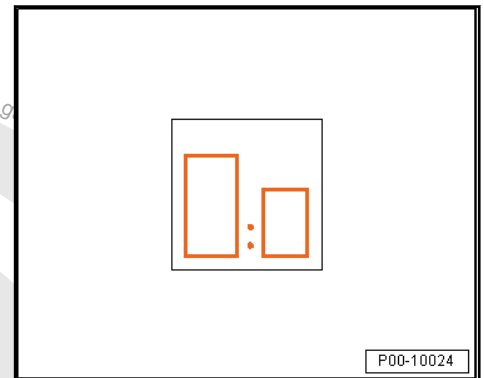
- Before applying the wet-in-wet filler, lightly clean again using the Antistatic Plastic Cleaner - LVM 001 001- or Silicone Remover, Long - LVM 020 100- (antistatic effect).



#### 1. Wet-in-Wet Filler Processing

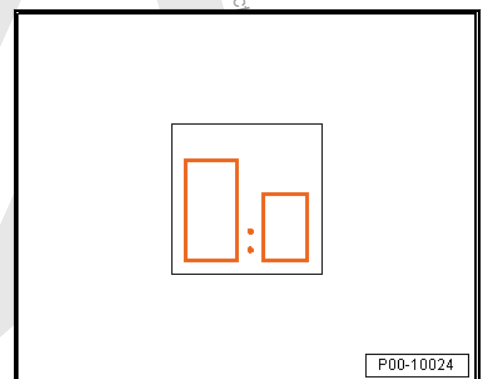
Mixing ratio 5:1 by volume with:

- ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5-
- ◆ Two-Part VHS Hardener, Long - LHA 009 052...-
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-
- ◆ Two-Part VHS Performance Hardener - LVM 009 038 A2-
- ◆ Two-Part VHS Performance Hardener, Long - LVM 009 039 A2-



Mixing ratio 3:1 by volume with:

- ◆ Two-Part HS Hardener, Short - LHA 021 004 A3-
- ◆ Two-Part HS Hardener - LHA 009 041 A3-
- ◆ Two-Part HS Hardener, Long - LHA 009 047 A3-
- ◆ Two-Part HS Hardener, Extra Long - LHA 009 048 A3-





#### Working time/pot life:

- Ready to spray 45 to 90 minutes at +20 °C (68 °F) (depending on the hardener and thinner used).

#### Thinner:

- ◆ Two-Part Thinner - LVE 009 001 A5-
- ◆ Two-Part Thinner, Special - LVM 009 200 ...-

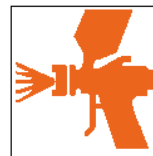
#### Application type “coat”

- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211

Processing viscosity 4 mm, “Compliant” and “HVLP” gravity spray gun, 16 to 18 seconds.

#### Adding thinner at +20 °C (68 °F) material temperature:

- ◆ 30 % when using VHS hardeners
- ◆ 20 % when using HS hardeners



P00-10029



P00-10032



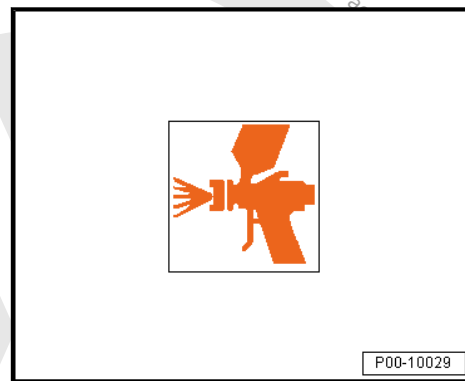
P00-10036



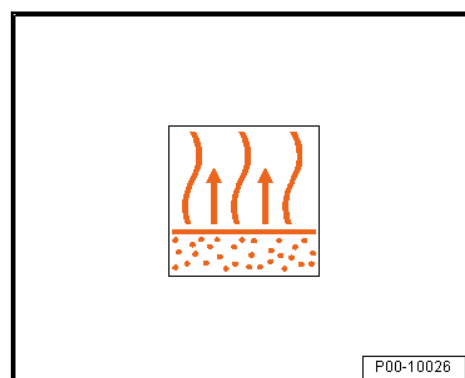
P00-10023



- Set the spray nozzle (see manufacturer's information): "Compliant" 1.3 to 1.4 mm.
- Set the spray nozzle (see manufacturer's information): "HVLP" 1.3 to 1.4 mm.
- Set spray pressure (see manufacturer's information): "Compliant" to 1.5 to 2.0 bar (21.76 to 29.01 psi).
- Set the atomization pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).
- One to two spray applications are required to get the recommended dry layer thickness of 30 to 50 µm.



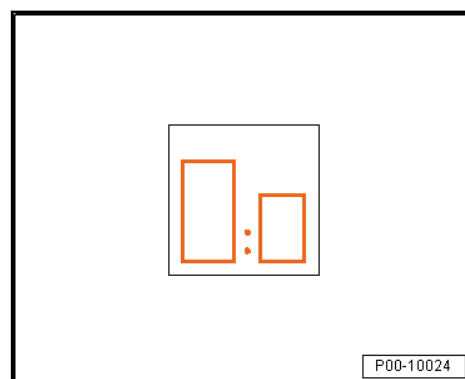
The flash-off time before continuing work is 15 minutes at +20 °C (68 °F) room temperature (maximum 8 hours before applying the top coat).



## 2. Wet-in-Wet Filler for Plastic Parts

Mixing ratio 5:1 by volume with:

- ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5-
- ◆ Two-Part VHS Hardener, Long - LHA 009 052...-
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-
- ◆ Two-Part VHS Performance Hardener - LVM 009 038 A2-
- ◆ Two-Part VHS Performance Hardener, Long - LVM 009 039 A2-





Mixing ratio 3:1 by volume with:

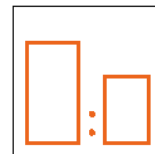
- ◆ Two-Part HS Hardener, Short - LHA 021 004 A3-
- ◆ Two-Part HS Hardener - LHA 009 041 A3-
- ◆ Two-Part HS Hardener, Long - LHA 009 047 A3-
- ◆ Two-Part HS Hardener, Extra Long - LHA 009 048 A3-

Working time/pot life:

- Ready to spray 45 to 90 minutes at +20 °C (68 °F) (depending on the hardener and thinner used).

Additive

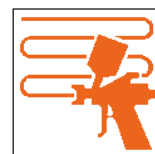
- ◆ Plastic Additive - LVM 035 120 A2-



P00-10024



P00-10029



P00-10032



P00-10036

Application type “coat”

- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211

Working viscosity 4 mm gravity feed spray gun “Compliant” and “HVLP” 18 to 20 seconds.





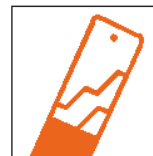
Adding additive at +20 °C (68 °F) material temperature:

- ◆ 40 % when using VHS hardeners
- ◆ 30 % when using HS hardeners
- ◆ If necessary, add 0 to 10% Two-Part Thinner, Special - LVM 009 200- .

- Set spray nozzle (see manufacturer's information): "Compliant" and "HVLP" to 1.3 to 1.4 mm.
- Set spray pressure (see manufacturer's information): "Compliant" to 1.5 to 2.0 bar (21.76 to 29.01 psi).
- Set the atomization pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).

- One to two spray applications are required to get the recommended dry layer thickness of 30 to 50 µm.

The flash-off time before continuing work is 15 minutes at +20 °C (68 °F) room temperature (maximum 8 hours before applying the top coat).



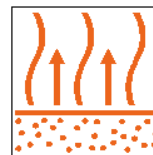
P00-10023



P00-10029



P00-10032



P00-10026



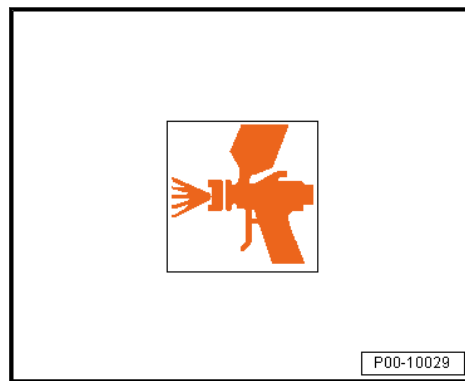
## Reworking

Can be painted over with:

- ◆ Water-based base paint and elasticized two-part HS clear coat
- ◆ Elasticized two-part HS top coat

## Special Instructions

- ◆ The material should be room temperature (18 through 25 °C) before use.
- ◆ Pay attention to the additional heating time to the object temperature.
- ◆ When using wash primer IR drying is not allowed.
- ◆ The Two-Part HS Wet-in-Wet Filler can also be used and plastic wet-in-wet filler on adjoining base surfaces, which are not made of plastic when adjusting.
- ◆ When air drying, a minimum of +15 °C (59 °F) is recommended.
- ◆ Excess ready to use material should not be put back into the original container.
- ◆ With regard to elastifying characteristics, using Two-Part Elastic Additive - ALZ 011 001- is not required.

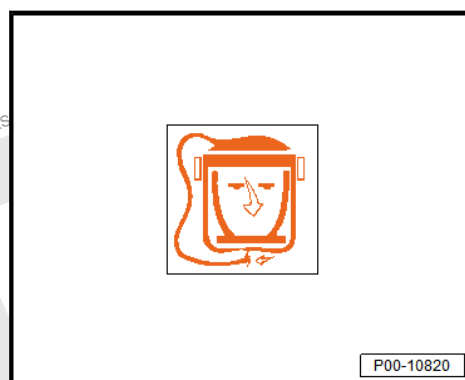


Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

## Characteristics

Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/IIIB (c) (540) 540	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 540 g (19 oz)/L volatile organic compounds. The VOC value of this product in ready-to-use form is a maximum of 540 g (19 oz)/L.

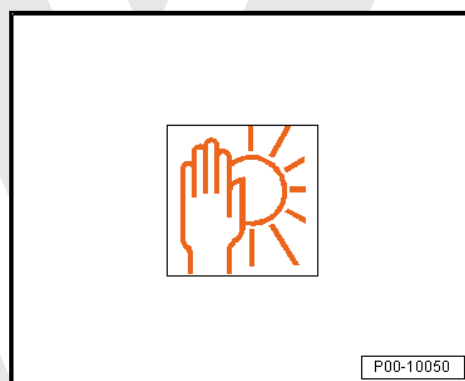


## Storage

The guaranteed shelf life is:

- ◆ Two-Part HS Wet-in-Wet Filler - LVM 013 008 A4- 24 months from production date.
- ◆ Two-Part HS Wet-in-Wet Filler - LVM 013 905 A4- 24 months from production date.

Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



## 3.6.6 Two-Part Base Filler, Pro

Definition:

- ◆ Two-Part Base Filler, Pro - LVM 037 500 B2- , gray



Edition, 03/2017

## Product Description

The Two-Part Base Filler, Pro - LVM 037 500 B2- is used as a base filler, primer and wet-in-wet filler.

- ◆ Suitable for three-layer structure for steel, galvanizing, aluminum, old paint and GFK / SMC
- ◆ High corrosion protection
- ◆ Good weather resistance
- ◆ Good top coat gloss

## Application Instructions

### Base surface

Suitable base surfaces:

- ◆ No sanding of cathophoretic dip coating (CDC) new parts required.
- ◆ With Two-Part Base Filler, Pro - LVM 037 500 B2- coated parts can be painted over without intermediate sanding for up to 5 days.
- ◆ When air drying keep a minimum temperature of +15 °C (59 °F).

Pre-treatment of base surfaces:

- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.

- Then, sand.

The effort needed for cleaning depends on the type and quantity of the separating agent used.

For example, use Sandpaper - 3M 7448- or sandpaper from a comparable manufacturer to assist in cleaning.



P00-10038



P00-10037



Let the thinner evaporate, for example air-drying overnight or for 30 to 40 minutes at +60 °C.

#### Application areas:

Base filler. Refer to ➤ [page 140](#) .

High-build base filler. Refer to ➤ [page 143](#) .

Primer. Refer to ➤ [page 146](#) .

Wet-in-wet filler processing for metal and plastic. Refer to ➤ [page 149](#) .

#### Base Filler

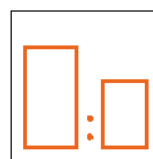
Mixing ratio 5:1 by volume with:

- ◆ Adding hardener at +20 °C (68 °F) material temperature:
- ◆ 20 % Filler Hardener, Pro - LVM 009 402 B1-

- ◆ Adding thinner at +20 °C (68 °F) material temperature:
- ◆ 20 % Thinner - LVM 005 000 B2-



P00-10038



P00-10024



P00-10023



P00-10023



Working time/pot life:

90 minutes at + 20 °C (68 °F)

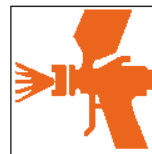
Spray applications:

- 1/2 + 1
- Layer thickness is approximately 50 - 70 µm

- Spray viscosity at +20 °C (68 °F), DIN 4

Gravity feed spray gun spray viscosity "Compliant" and "HVLP"  
18 to 20 seconds.

- Set spray nozzle (see manufacturer's information): "Compliant" 1.6 to 1.8 mm.
- Set spray nozzle (see manufacturer's information): "HVLP" 1.7 to 1.9 mm.
- Set spray pressure (see manufacturer's information): "Compliant" to 2.0 bar (29.01 psi).
- Set the spray pressure (see manufacturer's information): "HVLP" to 2.0 to 3.0 bar (29.01 to 43.51 psi).
- Set the atomization pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).



P00-10029



P00-10032



P00-10036



P00-10029



- 1 to 3 spray applications are required to get the recommended dry layer thickness of 50 to 70 µm.



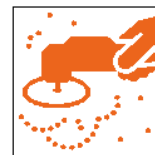
P00-10032



P00-10027



P00-10028



P00-10040

#### Drying:

- ◆ At a temperature of 20 °C: 16 hours
- ◆ At a temperature of 60 °C: 35 minutes

IR drying with short radiation 9 minutes (4 minutes 60 °C (140 °F), 5 minutes 80 °C (176 °F))

#### Pretreatment of filled base surfaces:

- Dry-sand with rotary sander and dust extraction, P400-500 grit.



- Or “wet”-sand with P800 sandpaper.

- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.
- Wipe off any excess cleaning solution with a lint-free cloth, leaving no streaks.

### High-Build Base Filler

Mixing ratio 5:1 by volume with:

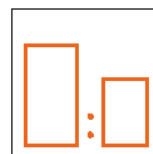
- ◆ Adding hardener at +20 °C (68 °F) material temperature:
- ◆ 20 % Filler Hardener, Pro - LVM 009 402 B1-



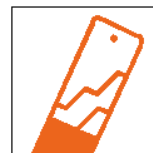
P00-10041



P00-10038



P00-10024



P00-10023



- ◆ Adding thinner at +20 °C (68 °F) material temperature:
- ◆ 20 % Thinner - LVM 005 000 B2-

Working time/pot life:

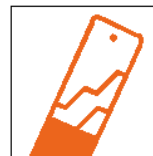
90 minutes at + 20 °C (68 °F)

Spray applications:

- 1/2 + 2
- Approximately 80-120 µm thick

- Spray viscosity at +20 °C (68 °F), DIN 4

Gravity feed spray gun spray viscosity "Compliant" and "HVLP"  
18 to 20 seconds.



P00-10023



P00-10029



P00-10032

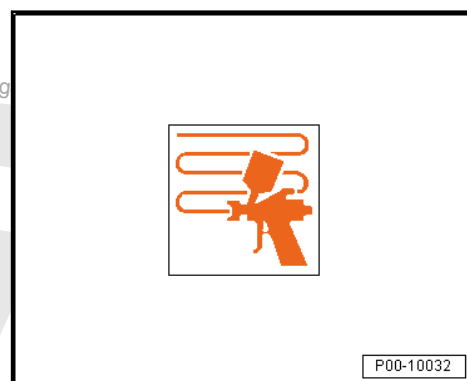
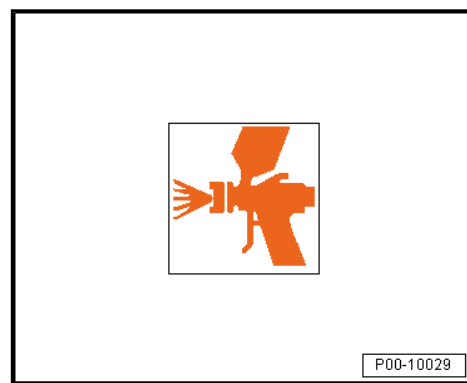


P00-10036



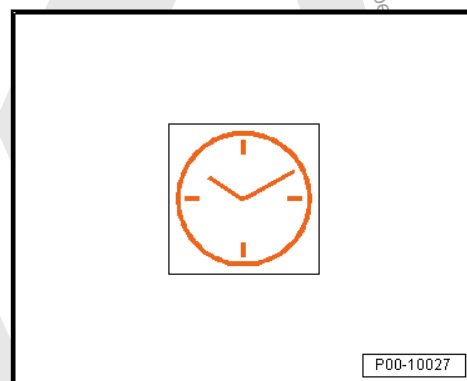


- Set spray nozzle (see manufacturer's information): "Compliant" 1.6 to 1.8 mm.
- Set spray nozzle (see manufacturer's information): "HVLP" 1.7 to 1.9 mm.
- Set spray pressure (see manufacturer's information): "Compliant" to 2.0 bar (29.01 psi).
- Set the spray pressure (see manufacturer's information): "HVLP" to 2.0 to 3.0 bar (29.01 to 43.51 psi).
- Set the atomization pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).
- 1 to 3 spray applications are required to get the recommended dry layer thickness of 80 to 120 µm.



#### Drying:

- ◆ At a temperature of 20 °C: 16 hours
- ◆ At a temperature of 60 °C: 45 minutes



IR drying with short radiation 15 minutes (4 minutes 60 °C (140 °F), 11 minutes 80 °C (176 °F))





#### Pretreatment of filled base surfaces:

- Dry-sand with rotary sander and dust extraction, P400-500 grit.



P00-10040

- Or “wet”-sand with P800 sandpaper.



P00-10041

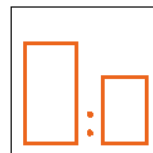
- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.
- Wipe off any excess cleaning solution with a lint-free cloth, leaving no streaks.



P00-10038

#### Primer

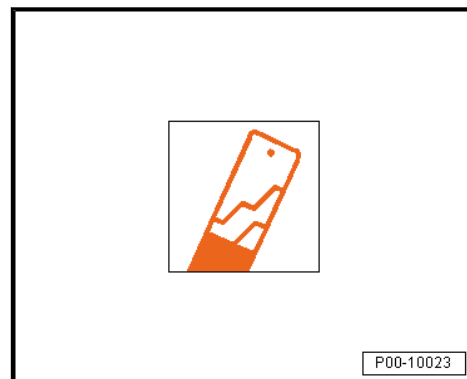
Mixing ratio 5:1 by volume with:



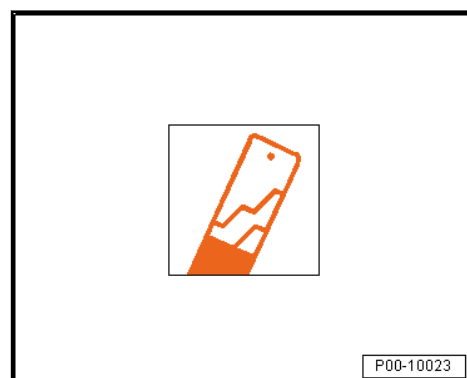
P00-10024



- ◆ Adding hardener at +20 °C (68 °F) material temperature:
- ◆ 20 % Filler Hardener, Pro - LVM 009 402 B1-

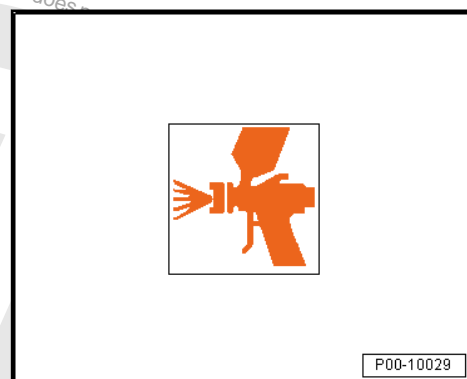


- ◆ Adding thinner at +20 °C (68 °F) material temperature:
- ◆ 20 % Thinner - LVM 005 000 B2-



Working time/pot life:

90 minutes at + 20 °C (68 °F)



Spray applications:

- 1 thin coat (complete)
- Approximately 10 - 20 µm thick





- Spray viscosity at +20 °C (68 °F), DIN 4

Gravity feed spray gun spray viscosity “Compliant” and “HVLP”  
18 to 20 seconds.

- Set spray nozzle (see manufacturer's information): “Compliant” 1.3 to 1.7 mm.
- Set spray nozzle (see manufacturer's information): “HVLP” 1.3 to 1.7 mm.
- Set spray pressure (see manufacturer's information): “Compliant” to 2.0 bar (29.01 psi).
- Set the spray pressure (see manufacturer's information): “HVLP” to 2.0 to 3.0 bar (29.01 to 43.51 psi).
- Set the atomization pressure (see manufacturer's information): “HVLP” 0.7 bar (10.15 psi).
- 1 to 3 spray applications are required to get the recommended dry layer thickness of 50 to 70 µm.

The flash-off time before processing further at +20 °C (68 °F)  
room temperature is 10 to 15 minutes.



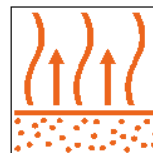
P00-10036



P00-10029



P00-10032



P00-10026

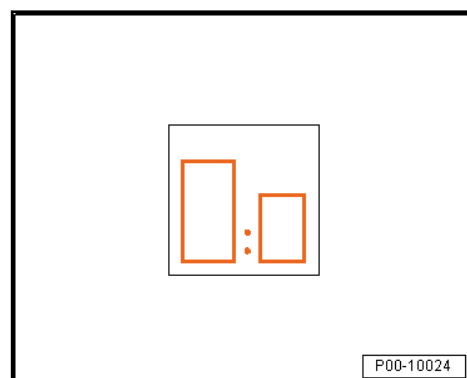


- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.
- Wipe off any excess cleaning solution with a lint-free cloth, leaving no streaks.

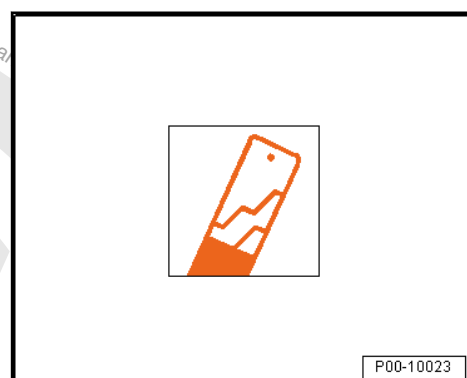


### Wet-in-wet filler processing for metal and plastic

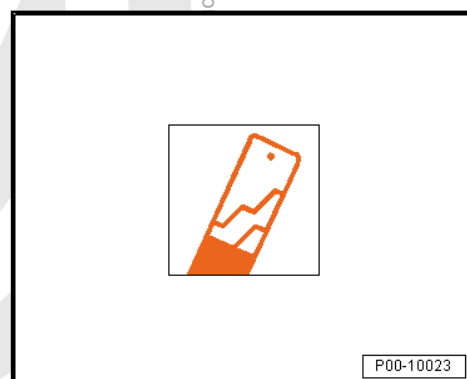
Mixing ratio 4:1 by volume with:



- ◆ Adding hardener at +20 °C (68 °F) material temperature:
- ◆ 25 % Filler Hardener, Pro - LVM 009 402 B1-



- ◆ Adding thinner at +20 °C (68 °F) material temperature:
- ◆ 25 % Thinner - LVM 005 000 B2-





Working time/pot life:

90 minutes at + 20 °C (68 °F)

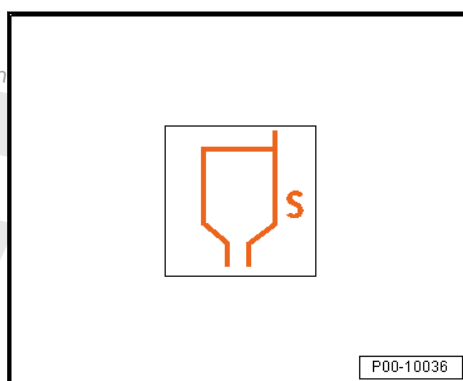
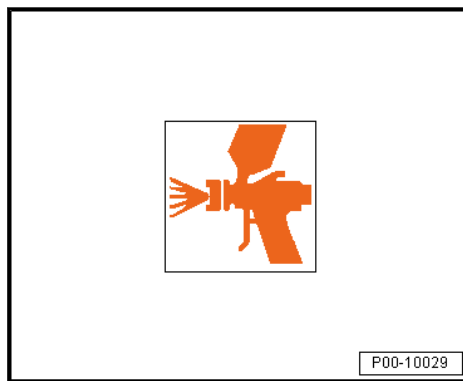
Spray applications:

- $1/2 + 1 = 1/2 \times \text{filled area} / 1 \times \text{entire surface}$
- Approximately 30 - 40 µm thick

- Spray viscosity at +20 °C (68 °F), DIN 4

Gravity feed spray gun spray viscosity "Compliant" and "HVLP"  
15 to 20 seconds.

- Set the spray nozzle (see manufacturer's information):  
"Compliant" 1.3 to 1.4 mm.
- Set spray nozzle (see manufacturer's information): "HVLP"  
1.3 mm.
- Set spray pressure (see manufacturer's information): "Com-  
pliant" to 2.0 bar (29.01 psi).
- Set the spray pressure (see manufacturer's information):  
"HVLP" to 2.0 to 3.0 bar (29.01 to 43.51 psi).
- Set the atomization pressure (see manufacturer's informa-  
tion): "HVLP" 0.7 bar (10.15 psi).



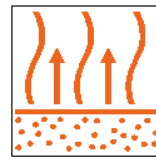


- 1 to 3 spray applications are required to get the recommended dry layer thickness of 30 to 40 µm.

The flash-off time before processing further at +20 °C (68 °F) room temperature is 25 to 30 minutes.



P00-10032



P00-10026

- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.
- Wipe off any excess cleaning solution with a lint-free cloth, leaving no streaks.



P00-10038

### Reworking

Can be painted over with:

- ◆ Water-based base paint and elasticized two-part HS clear coat
- ◆ Elasticized two-part HS top coat



P00-10029



#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application



P00-10820

#### Storage

The guaranteed shelf life is:

- ◆ Two-Part Base Filler, Pro - LVM 037 500 B2- 24 months from the production date.
- ◆ Filler Hardener, Pro - LVM 009 402 B1- 18 months from the production date.
- ◆ Thinner - LVM 005 000 B2- 5 years from the production date.

Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



P00-10050

### 3.6.7 Two-Part HS Speed Filler

#### Definition:

- ◆ Two-Part HS Speed Filler - LVM 016 100/173/190 - .

#### Product Description:

The Two-Part HS Speed Filler - LVM 016 100/173/190 - 190 makes it possible to increase the number of cycles in the workshop.

Two-part HS speed filler optimizes the working process considerably thanks to its simple usage and fast drying. Air drying properties are much shorter compared to standard fillers that are air dried. The result is a faster working process, even without IR drying.

An important advantage is a smooth surface, which provides an excellent painting result.

- ◆ Simple mixture ratio 1:1 with speed filler hardener LVM 009 054.
- ◆ Fast application process with up to four coats.
- ◆ Excellent stability under load.
- ◆ Time and energy savings thanks to excellent air drying properties. Parts can be sanded after just 20 minutes, depending on the climatic conditions.
- ◆ Other drying methods can also be used, for example forced drying at different temperatures or IR drying.
- ◆ Thanks to air drying, different types of work can also be performed at the same time, from minimal damage repair, to clever repairs, to partial painting.
- ◆ The smooth filler surface creates the basis for an excellent paint finish.
- ◆ Available in the colors white, medium gray, and anthracite.





- ◆ A pre-treatment towel D 043 100 M5 must be used.

## Application Instructions

### Product preparation:

- ◆ Stir thoroughly by hand before placing the container in the mixer.
- ◆ Humidity has an accelerating influence on the drying properties and pot life.
- ◆ Do not use the wash primer under two-part HS speed filler LVM 016 100/173/190.
- ◆ A pre-treatment towel D 043 100 M5 must be used on uncoated metal base surfaces. Failure to use this can be verified with an analysis.
- ◆ Two-part HS speed filler should be at a room temperature of +18 to 25 °C (64.4 to 77 °F) before use.
- ◆ It can also be applied with a short intermediate flash-off time to separate from filling repairs.
- ◆ After 90 minutes of air drying, filler paste/spray filler can be applied.
- ◆ Do not put excess, ready-to-use two-part HS speed filler back in the original container.
- ◆ Early sanding is possible when using premium/flexible sanding disks.
- ◆ Can be sanded after 20 minutes, depending on the humidity, temperature and dry layer thickness.
- ◆ After use, all containers must be securely sealed immediately.
- ◆ If necessary, up to 5% thinner can be added to the mixed two-part HS speed filler for large surfaces.
- ◆ If two-part speed filler has been elasticized, this mixture can also be applied to adjacent metal surfaces. The adjustment remains VOC-compliant.
- ◆ An elastification is required for rigid and semi-rigid plastic types.

### Characteristics

Delivery Viscosity	Depends on the color.
Flashpoint:	+23 °C (73.4 °F)
VOC value: 2004/42/IIIB (d) (420) 420	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 420 g (14.8 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 420 g (14.8 oz)/L.

### Base surface:

STANDARD SANDING processing

Suitable base surfaces:

- ◆ Steel panels, galvanized steel panels, or soft aluminum, sanded, cleaned and pre-treated with D 043 100 M5 pre-treatment towel.
- ◆ Old or factory paint structure, well-sanded and cleaned.
- ◆ Original factory paint structure cataphoretic dip coating (CDC), sanded and cleaned.

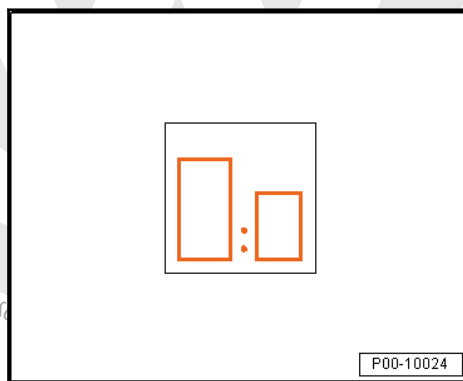


- ◆ Surfaces prepared with two-part polyester products and then sanded very fine and cleaned.

Pre-treatment of base surfaces:

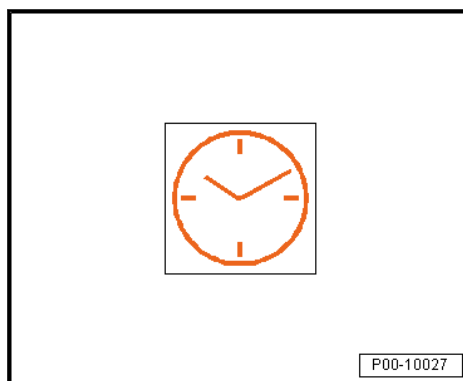
- Clean base surfaces with suitable cleaning solution so that all contamination or residue is removed.

Pay attention to the mixture ratio:



Filler		Hardener		Catalyst	
Volume	Weight	Volume	Weight	Volume	Weight
1	100	1	55	10%	10
Two-part HS speed filler LVM 016 100/173/190		Two-part speed filler hardener LVM 009 054		Two-part HS speed filler catalyst LVM 016 001	

Pay attention to the working time of 30 minutes - 60 minutes at 20 °C (68 °F)





- Adjust the spray nozzle (see the manufacturer's information):
- Adjust the spray nozzle (see manufacturer's information):  
"Compliant" 1.4 to 1.6 mm.
- Adjust the spray nozzle (see manufacturer's information):  
"HVLP" 1.4 to 1.6 mm.
- Adjust the spray pressure (see manufacturer's information):  
"Compliant" to 1.0 to 1.5 bar (14.5 to 21.76 psi).
- Set the atomization pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).

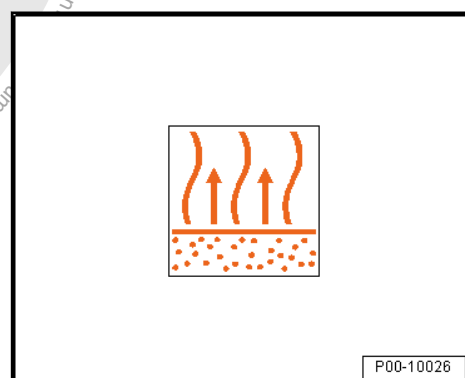
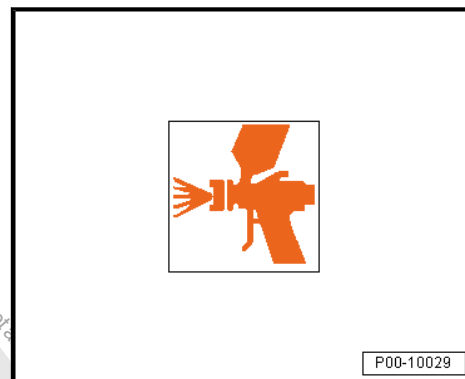
#### Spray applications:

- Perform two to four spray applications until the surface is matte.

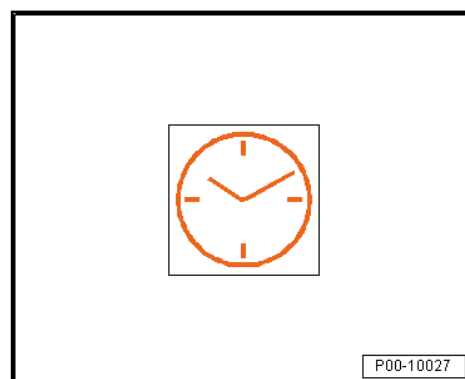
#### Flash-off time:

Adhere to the flash-off time after the first spray application

No flash-off is required for the spray applications after that.



#### Drying:



	Two-part speed filler hardener LVM 009 054
20 °C (68 °F)	20 to 60 minutes
40 to 45 °C (104 to 113 °F)	10 to 15 minutes
60 to 65 °C (140 to 149 °F)	5 to 10 minutes



Note for IR drying with a short-wave heater:

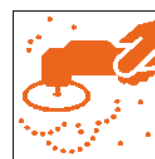
- ◆ half-output
- ◆ 5 to 10 minutes



P00-10028

Pretreatment of filled base surfaces:

- Dry-sand with rotary sander and dust extraction (P500 to P600 grit) and vacuum up dust.
- Paint over within 24 hours.



P00-10040

- ◆ Water-based base paint and two-part HS clear coat
- ◆ Two-part HS top coat.

**Base surface:**

STANDARD PLASTIC TYPES processing

Suitable base surfaces:

- ◆ Repairs on cleaned and sanded passenger vehicle plastic parts on the exterior of vehicles; original factory primer for plastic, sanded and cleaned.
- ◆ Fiberglass-reinforced polyester base surfaces, free of separating agents, sanded and cleaned.
- ◆ Plastic parts coated with Bonding Agent - LVM 823 000 A2- .
- Clean base surfaces with suitable cleaning solution so that all contamination or residue is removed.



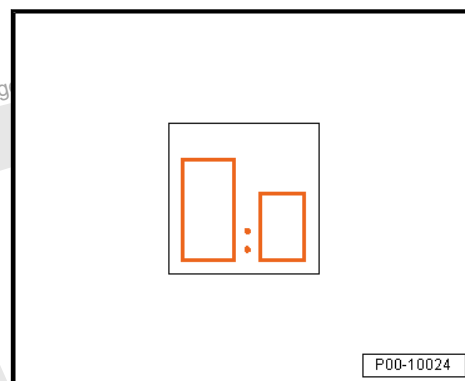
P00-10029



P00-10038



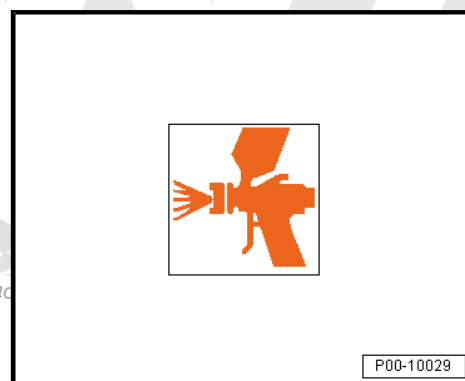
Pay attention to the mixture ratio:



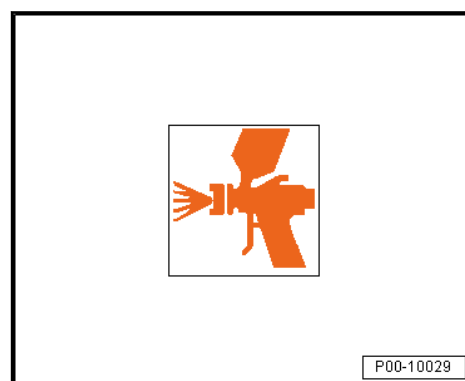
Filler		Additive		Hardener	
Volume	Weight	Volume	Weight	Volume	Weight
1	100	10%	6	1	60
Two-part HS speed filler LVM 016 100/173/190		Two-part elastic additive ALZ 011 001		Two-part speed filler hardener LVM 009 054	

Working time/pot life:

30 to 60 minutes at + 20 °C (68 °F)



- Adjust the spray nozzle (see the manufacturer's information):
- Adjust the spray nozzle (see manufacturer's information): "Compliant" 1.4 to 1.6 mm.
- Adjust the spray nozzle (see manufacturer's information): "HVLP" 1.4 to 1.6 mm.
- Adjust the spray pressure (see manufacturer's information): "Compliant" to 1.0 to 1.5 bar (14.5 to 21.76 psi).
- Set the atomization pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).

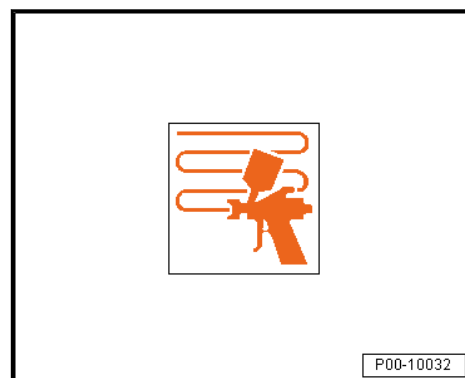


Spray applications:

- Perform two to three spray applications until the surface is matte.

Flash-off time:

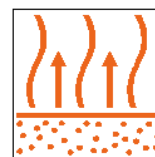
Adhere to the flash-off time after the first spray application





No flash-off is required for the spray applications after that.

Drying:



P00-10026



P00-10027

	Two-part speed filler hardener EVM 009 054
20 °C (68 °F)	20 to 60 minutes
40 to 45 °C (104 to 113 °F)	10 to 15 minutes
60 to 65 °C (140 to 149 °F)	5 to 10 minutes

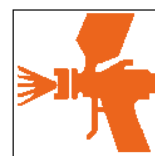
Pretreatment of filled base surfaces:

- Dry-sand with rotary sander and dust extraction (P500 to P600 grit) and vacuum up dust.
- Paint over within 24 hours.



P00-10040

- ◆ Water-based base paint and two-part HS clear coat
- ◆ Two-part HS top coat.



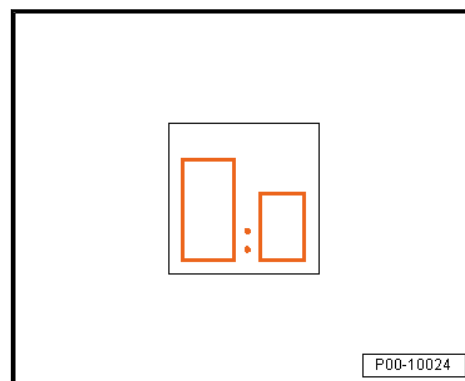
P00-10029



## Product mix mixture ratio

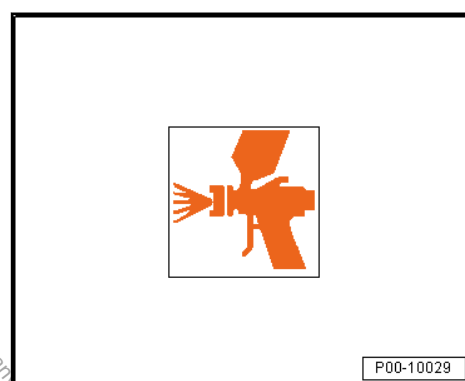
Mixture ratios with special additives can be found in the product mix table on WizardWeb and in the respective data sheet.

The hardener and thinner should be selected depending on the processing temperature and size of the repair area if possible.



Two-part speed filler hardener LVM 009 054	Special hardener that can only be used with the two-part HS speed filler LVM 016 ... It can be used for all types of repairs under all climatic conditions and drying options.
Two-part HS speed filler catalyst LVM 016 001	The catalyst can only be used with two-part HS speed filler LVM 016 ... It accelerates the air drying at low humidity and oven drying of the filler.
Thinner, special LVM 009 200	Medium thinner suitable for partial, multi-part, and large-surface repairs. Mainly used at temperatures from +15 to 30 °C (59 to 86 °F).
Thinner, long LVM 009 300	Long thinner for multi-part to full paint jobs. Mainly used at high temperatures from +30 to 40 °C (86 to 104 °F).

- Apply a dry layer thickness of 80 to 150 µm. Theoretical yield:
- ◆ 390 m<sup>2</sup>/l at 1 µm dry layer thickness.
- ◆ The theoretical yield may vary due to different hardener characteristics and different mixture ratios of the ready-to-spray mixture in some data sheets.
- ◆ Practical material consumption depends on various factors, such as the geometry of the object, the surface characteristics, processing method, spray gun adjustment, inlet pressure, etc.
- Clean the spray device after use using a suitable cleaner containing a solvent.





#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application



P00-10820

#### Storage

The guaranteed shelf life is:

- ◆ Two-Part HS Speed Filler - LVM 016 100/173/190 - 24 months from the production date.

Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



P00-10050

## 3.7 Top Coats

⇒ [“3.7.1 Two-Part HS Top Coat”, page 160](#)

⇒ [“3.7.2 Aquaplast System \(Solid and Metallic\)”, page 167](#)

⇒ [“3.7.3 Aquaplast System \(Pearl Effect and Heliochrome\)”, page 173](#)

⇒ [“3.7.4 Aquaplast Touch-Up System”, page 180](#)

⇒ [“3.7.5 Aqua Premium System”, page 184](#)

⇒ [“3.7.6 Aqua Premium Touch-Up System”, page 195](#)

⇒ [“3.7.7 Aqua Premium System \(Rim Paintwork\)”, page 200](#)

### 3.7.1 Two-Part HS Top Coat

#### Definition:

- ◆ Two-Part HS Solid Top Coat - L2K 073 ... -
- ◆ Two-Part HS Mixed Paint - L2K 074 ... -

Edition 08/2016

#### Product Description

The two-part HS top coat series is a high solid top coat system. It is used for vehicle painting.

The color program is extensively coordinated through an assortment of paint mixtures.

#### Characteristics:

- ◆ Easy to process
- ◆ Dries quickly
- ◆ Excellent top coat gloss
- ◆ VOC compliant below 420 g (14.8 oz)/L





## Application Instructions

### Base surface

Suitable base surfaces:

- ◆ Hardened, solvent-resistant, well-preserved and sanded old paint or factory paints
- ◆ Surfaces treated with primer or filler

Suitable pre-treatment materials:

- Dependent on the object and base surface in accordance with the structure recommendations.

Pre-treatment of base surfaces:

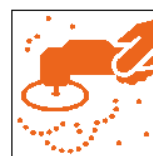
- Carefully clean using Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .

- Dry-sand with rotary sander and dust extraction, P400-500 grit.

- Or “wet”-sand with P800-1000 sandpaper.



P00-10038



P00-10040



P00-10041



- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.

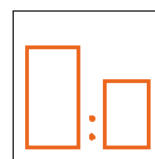


P00-10038

## Processing

Mixing ratio 3:1 by volume with:

- ◆ Two-Part VHS Hardener, Short - LHA 009 050 A2- (for small surfaces, spot repair)
- ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5- (for small to medium-sized surfaces, at moderate temperatures)
- ◆ Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3- (for larger surfaces at moderate temperatures)
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2- (for large surfaces and high temperatures)
- ◆ See technical application information for the two-part VHS hardener. Refer to ➔ [“3.9.2 Two-Part VHS Hardener and Two-Part VHS Performance Hardener”, page 258](#) .



P00-10024



## Note

*The mixture ratio for Black Matte - L2K 073 3FZ A2- and Gray Matte - L2K 073 7DL A2- is 4:1 with Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5- .*

Working time/pot life:

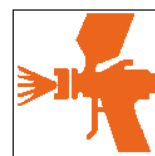
- Ready to spray in 60 to 90 minutes at +20 °C (68 °F)

Can be thinned using Two-Part Thinner, Special - LVM 009 200 A2- , HS Spot Thinner - LVM 006 000 A2- or Two-Part Thinner, Long - LVM 009 300 A2- .



## Note

*When using the HS Spot Thinner - LVM 006 000 A2- , observe the technical application information. Refer to ➔ [“3.10.2 HS Spot Thinner”, page 266](#) .*



P00-10029

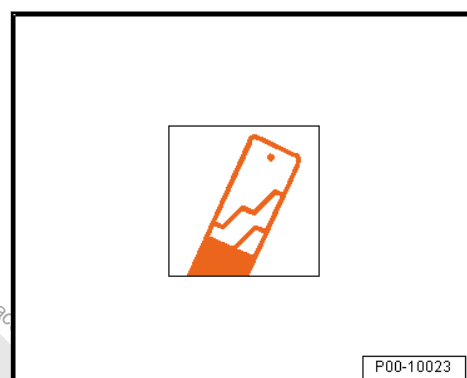
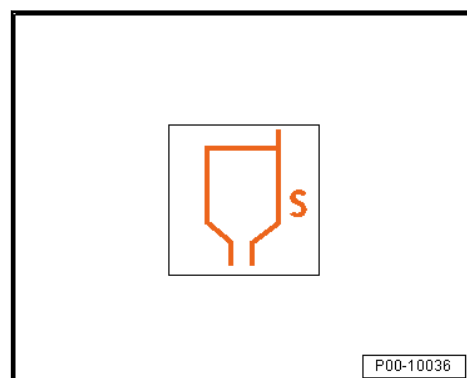
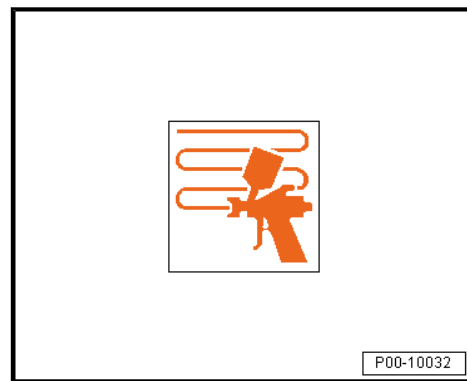


## Application type "coat"

- Processing viscosity at +20 °C (68 °F) material temperature  
Processing viscosity "Compliant" and "HVLP":  
18 to 20 Seconds  
18 to 25 seconds for Black Matte - L2K 073 3FZ A2- and Gray  
Matte - L2K 073 7DL A2-

- Adding 12.5 % thinner at +20 °C (68 °F) material temperature

- Set spray nozzle (see manufacturer's information): "Compliant" 1.2 to 1.4 mm.
- Set the spray nozzle (see manufacturer's information): "HVLP" 1.3 to 1.4 mm.
- Set the spray pressure (see manufacturer's information): "Compliant" to 2.0 to 2.5 bar (29.01 to 36.26 psi).
- Set the atomizing pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).



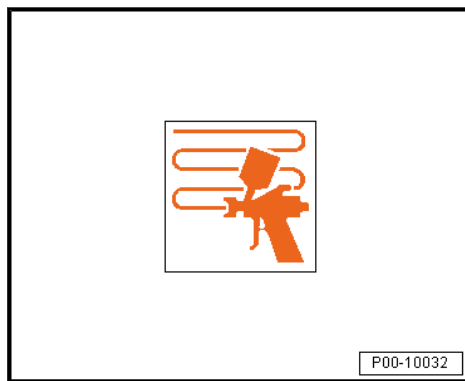


- 1.5 spray applications are required to get the recommended dry layer thickness of 50 to 60 µm.



#### Note

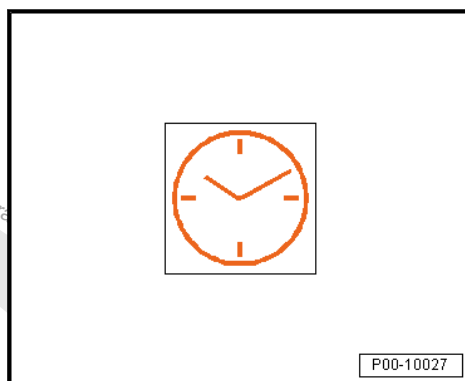
- ◆ When using for minimal damage repairs (clever repair procedure), the 12.5% Two-Part Thinner, Special - LVM 009 200 A2- can be replaced with 12.5 % HS Spot Thinner - LVM 006 000 A2-.
- ◆ Do not apply on slanted surfaces.
- ◆ During the spray application process, the first half spray application should form a thin, preliminary film upon which a fully-completed spray application can be applied.
- ◆ For less opaque colors, it may be necessary to apply another spray application after the corresponding flash-off time. Painting over the two-part HS top coat with same is possible to do without »intermediate sanding« when done within 24 hours.
- ◆ The mixing paint in this mixing paint series can only be used within the color tone formulas. When processing individual mixing paints on their own, major deviations from the information given in the application instructions are possible.



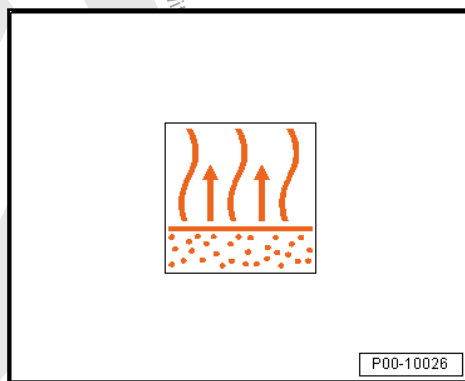
#### Drying

Air dry at +20 °C (68 °F) room temperature:

- ◆ Dust dry after 20 to 30 minutes
- ◆ Ready for assembly after 5 to 6 hours
- ◆ Dry overnight



Final flash-off time with forced drying is a minimum of 5 to 10 minutes.





Forced dry at +60 °C (140 °F) object temperature for 15 to 20 minutes

Final flash-off time for IR drying is at least five minutes.

IR drying of bright colors with short-wave radiators for 5 minutes at 50 % power and then for 10 minutes at 100 % power.

IR drying of bright colors with medium-wave radiators for 15 minutes

IR drying of dark colors with medium-wave radiators for 12 minutes

IR drying of dark colors with short-wave radiators for 12 minutes at 50% power



#### Note

*When using a short-wave radiator at 100% power, bubbles or solvent popping marks could form when reworking dark colors.*

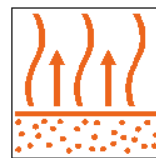
#### Special Instructions:

##### Elastification:

- ◆ The base material must first be mixed with 15 % Two-Part Elastic Additive - ALZ 011 001- .
- ◆ Mixture with two-part VHS hardeners, 3:1 with 15 % thinner



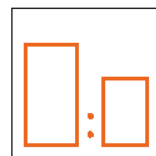
P00-10027



P00-10026



P00-10028

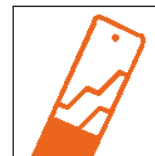


P00-10024



### Structuring

- ◆ The base material must first be mixed with 100 % Structuring Component, Fine - ALN 775 108- .
- ◆ Elastification is omitted!
- ◆ Mixture with two-part VHS hardeners, 4:1 with 15 % thinner



P00-10023

Two spray applications with 5 to 10 minutes intermediate flash-off time for an even paint film surface.



P00-10032

### Matting:

- ◆ The base material must first be mixed with 100 % Matting Component - ALN 775 106- .
- ◆ Elastification is omitted!

Refer to ➔ ["3.2.2 Gloss Level Adjustment of HS Clear Coat and HS Top Coat with Matting Component"](#), page 29 for detailed information for processing.



P00-10023



### Note

- ◆ *The Black Matte - L2K 073 3FZ A2- and Gray Matte - L2K 073 7DL A2- two-part solid top coats do not require additional Matting Component - ALN 775 106- , since they are already matted.*
- ◆ *Mixture ratio for Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5- is 4:1 with 15 % thinner.*
- ◆ *Two spray applications (with 5 to 10 minutes intermediate flash-off time) are needed for an even paint film surface.*

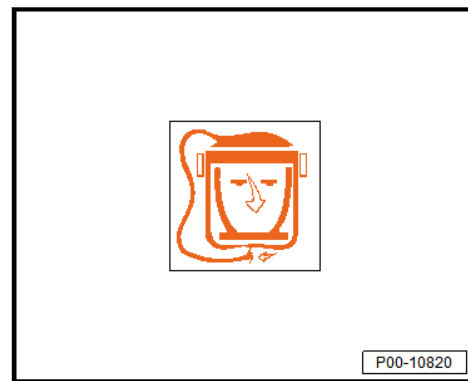


## Personal Protective Equipment

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

## Characteristics

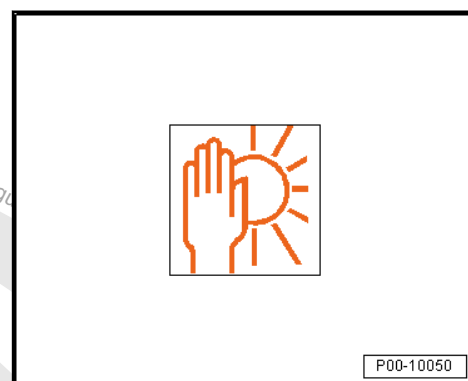
Delivery Viscosity	Depends on the color.
Flashpoint:	+23 °C (73.4 °F)
VOC value: 2004/42/IIB (d) (420) 420	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 420 g (14.8 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 420 g (14.8 oz)/L.



## Storage

The Two-Part HS Solid Top Coat - L2K 073 ... - has a guaranteed shelf life of 24 months from date of manufacture.

The Two-Part HS Mixed Paint - L2K 074 ... - has a guaranteed shelf life of 36 to 48 months from date of manufacture. Use both products no later than the date indicated on the label and store in original container at +20 °C (68 °F).



## 3.7.2 Aquaplus System (Solid and Metallic)

### Definition:

- ◆ Water-Based Solid Mixed Paint - LWM 075 ...-
- ◆ Water-Based Metallic Mixed Paint - LWM 076 ...-
- ◆ Water-Based Solid Base Paint - LUW/LWG 038 ...-
- ◆ Water-Based Metallic Base Paint - LMW/LWG 039 ...-

Edition 11/2012

### Product Description

The Aquaplus system is a high-quality water-soluble base paint system. It is based upon special PU dispersion technology for high-quality solid and metallic two-coat vehicle paintwork.

### Characteristics:

- ◆ Easy to process
- ◆ Good stability under load
- ◆ High covering capacity
- ◆ Can be painted over with two-part HS clear coat
- ◆ VOC compliant



### Note

*After painting over with two-part HS clear coat it produces a high-gloss, weatherproof top coat.*



## Application Instructions

### Base surface

Suitable base surfaces:

- ◆ Intact old paint
- ◆ Primed and filled surfaces (two-part HS filler)
- ◆ With One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2- insulated base surfaces
- ◆ With Two-Part Plastic Adhesive Filler - LKF 696 009 A2- / Two-Part Plastic Adhesive Filler - LKF 696 040 A2- insulated base surfaces on plastic surfaces
- ◆ See special instructions, refer to ➤ [page 169](#) .

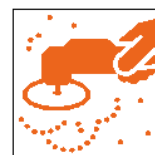
Pre-treatment of base surfaces:

- Clean the factory or old paint or two-part HS filler thoroughly with Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .



P00-10038

- Dry-sand with rotary sander and dust extraction, P400-500 grit.



P00-10040

- Or “wet”-sand with P800-1000 sandpaper.



P00-10041

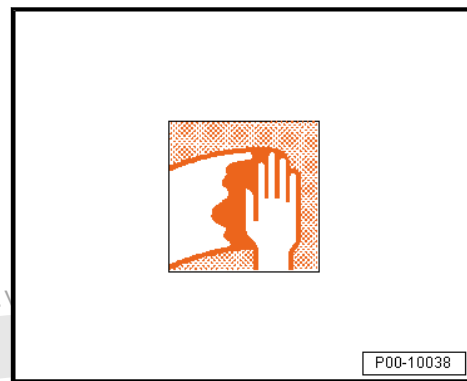




- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.
- Wipe off any residual silicone remover with a lint-free cloth, leaving no streaks.

### Special Instructions

- ◆ Sanded-through areas must be insulated with One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2- . The sanded-through areas should not be larger than 5.0 cm in diameter.
- ◆ When using the two-part HS filler, any bare areas must be insulated with Two-Part Wash Primer - LHV 043 000 A2- or One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2- .



### Processing

Mixing containers:

- Plastic containers or tin-coated cans painted on the inside

Screens:

- Filter watery base paint through water-tight, 125 µm strainers before working with cup systems.

Thinner:

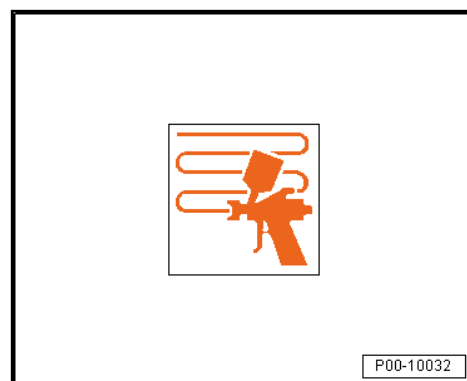
- Aquaplus Purified Water - LVW 010 000 A5- (according to ISO 3696)
- Use an Aquaplus measuring stick.
- An addition of 0 to 5 % Purified Water - LVW 010 000 A5- is sufficient at higher temperatures (greater than +25 °C (77 °F)) and a high relative humidity (greater than 60 %).



### Note

- ◆ *For safety reasons, do not store mixtures that contain both Microsilver, Extra - LWM 076 817 A2/A4- and Oxide Glaze - LWM 075 831 A1- . Pressure can build up in sealed containers!*
- ◆ *Accumulated residue should be immediately disposed of properly. Refer to ➔ [page 172](#) .*

Application type “coat”





- Processing viscosity at +20 °C (68 °F) material temperature is the mixing viscosity for "Compliant" and "HVLP".



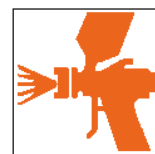
P00-10036

- Add 10 % thinner at +20 °C (68 °F) material temperature.



P00-10023

- Set spray nozzle (see manufacturer's information): "Compliant" 1.2 to 1.3 mm.
- Set spray nozzle (see manufacturer's information): "HVLP" WSB/1.3 mm.
- Set the spray pressure (see manufacturer's information): "Compliant" to 2.0 to 2.5 bar (29.01 to 36.26 psi).
- Set the atomizing pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).



P00-10029

- An application includes: applying a thin spray application and then a normal spray application. For color shades with special effects, we recommend a "finishing application".



P00-10032



#### Note

*For less opaque colors, it may be necessary to apply additional spray applications after the corresponding flash-off time.*

## Drying

The flash-off time for clear coat application is at +20 °C (68 °F) room temperature for 20 minutes.

For smaller surfaces, the following make it possible to reduce the flash-off time:

- ◆ The painted surfaces can be applied more quickly by blowing them with blower nozzles (hand blowers or with stationary devices).
- ◆ Blowing with a spray gun is also possible after waiting at least five minutes.

For larger surfaces, the following make it possible to reduce the flash-off time:

- ◆ The painted surfaces can be applied more quickly by using stationary blowing devices (such as ceiling systems), infrared radiators or oven drying.
- ◆ Ceiling system 10 to 15 minutes
- ◆ IR drying three to five minutes
- ◆ Cooling time a minimum of five minutes

### Oven drying at +60 °C

- ◆ Combination booth at least 10 minutes including heating time
- ◆ Drying-oven at least five minutes.
- ◆ Cooling time a minimum of five minutes

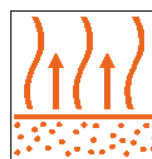


#### Note

*The evaporating and drying times specified here depend on the temperature, humidity, air sink speed in the spray booth and the number of spray applications. Always wait until the painted surface is completely mat.*



P00-10027



P00-10026



P00-10027



## Reworking

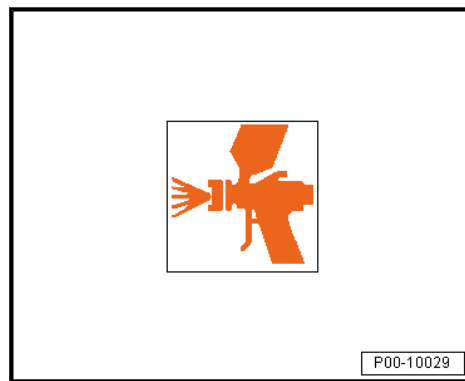
Can be painted over with:

- ◆ Two-part HS clear coat from the Volkswagen original paint product line

## Special Instructions

Touch-up system (for attaining an optically perfect color shade transition to the adjacent parts)

- Preparation:
  - Sand the filled areas (dry with P400-500 or with water-proof P800-1000 paper).
  - Thoroughly sand the adjacent surfaces with a fine sanding pad.
  - Clean the entire surface thoroughly with Silicone Remover - LVM 020 000 A5- to remove dust, sanding residue and other dirt.
  - Wipe off any residual silicone remover with a lint-free cloth, leaving no streaks.
  - Allow wet-sanded surfaces and cleaned surfaces to dry completely.
- Touch-up system for metallic and solid color shades:
  - Thoroughly cover the filled areas with water-based paint which has been prepared for spraying.
  - Expand the scope of each subsequent spray application. This overlapping results in only one misted zone.
  - Expand the run-off area and touch-up with reduced pressure.
  - After an appropriate final flash-off time, paint over with two-part HS clear coat.



## Using the products

- ◆ The spray devices should be suitable for use with water-soluble products; see manufacturer's information.
- ◆ The mixing paints in this top coat series can only be used within the color tone formulas. When processing individual mixing paints on their own, major deviations from the information given in the application instructions are possible.

## Cleaning the tools

- ◆ Rinse before and after using with Aquaplast Purified Water - LVW 010 000 A5- . Then rinse with Nitro Thinner - LVE 856 000 A3- .

## Disposal

- ◆ Collect liquid waste from water-soluble products and separate from liquid waste from conventional products. When mixing materials, disposal may no longer be possible, which is difficult and costly.



### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

### Characteristics

Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/IIB (d) (420) 420	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 420 g (14.8 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 420 g (14.8 oz)/L.

### Storage

The guaranteed shelf life for each product is:

- ◆ Water-Based Solid Mixed Paint - LWM 075 ...- 24 months from the production date.
- ◆ Water-Based Solid Base Paint - LUW/LWG 038 ...- 24 months from the production date.
- ◆ Water-Based Metallic Mixed Paint - LWM 076 ...- 24 months from the production date.
- ◆ Water-Based Metallic Base Paint - LMW/LWG 039 ...- 18/24 months from the production date.

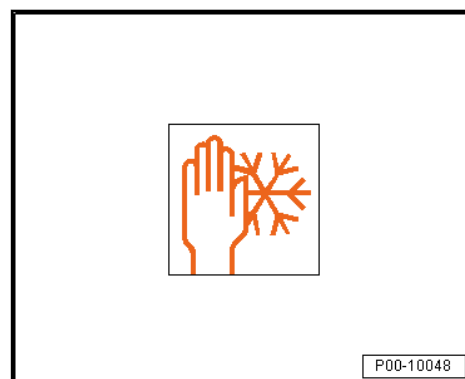
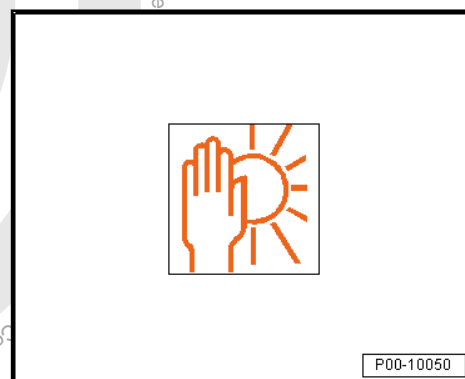
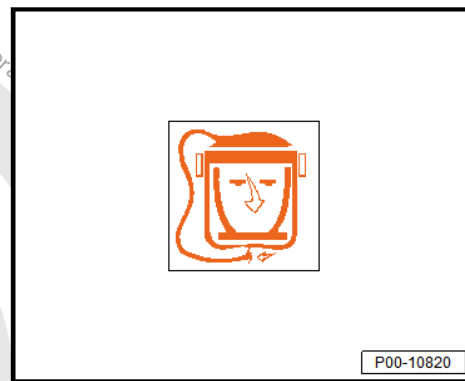
Use all of the products no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).

### Storage Conditions

The optimal storage temperature is +20 °C (68 °F) (not to fall below +5 °C (41 °F)).

The preferred temperature is between +15 °C and +25 °C (59 °F and 77 °F).

For short-term storage (approximately 4 weeks), between +5 °C and +35 °C (41 °F and 95 °F) is acceptable.



## 3.7.3 Aquaplus System (Pearl Effect and Heliochrome)

### Definition:

- ◆ Water-Based Pearl Effect Base Paint - LPW 040 ...-
- ◆ Water-Based Heliochrome Base Paint - LHW 046 ...-
- ◆ Water-Based Pearl Effect Mixed Paint - LWM 076 ...-

Edition 11/2012

### Product Description

The Aquaplus System is a high-quality water-soluble base paint system based on special PU dispersions

The base paint for pearl effect/heliochrome two-coat paintwork or pearlescent three-coat paintwork can be used on passenger and work vehicles.



#### Characteristics:

- ◆ Easy to process
- ◆ Good stability under load
- ◆ High covering capacity
- ◆ Can be painted over with two-part HS clear coat
- ◆ VOC compliant



#### Note

*After painting over with two-part HS clear coat it produces a high-gloss, weatherproof top coat.*

#### Application Instructions

##### Base surface

Suitable base surfaces:

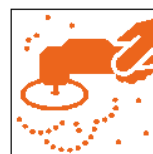
- ◆ Intact old paint
- ◆ Primed and filled surfaces (two-part HS filler)
- ◆ With One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2- insulated base surfaces
- ◆ With Two-Part Plastic Adhesive Filler - LKF 696 009 A2- / Two-Part Plastic Adhesive Filler - LKF 696 040 A2- insulated base surfaces on plastic surfaces
- ◆ See special instructions, refer to ➤ [page 175](#) .

Pre-treatment of base surfaces:

- Clean the factory or old paint or two-part HS filler thoroughly with Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .
- Dry-sand with rotary sander and dust extraction, P400-500 grit.



P00-10038



P00-10040



- Or “wet”-sand with P800-1000 sandpaper.



P00-10041

- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.
- Wipe off any residual silicone remover with a lint-free cloth, leaving no streaks.

### Special Instructions

- ◆ Sanded-through areas must be insulated with One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2- . The sanded-through areas should not be larger than 5.0 cm in diameter.
- ◆ When using the two-part HS filler, any bare areas must be insulated with Two-Part Wash Primer - LHV 043 000 A2- or One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2- .



P00-10038

### Processing

Mixing containers:

- Plastic containers or tin-coated cans painted on the inside

Screens:

- Filter watery base paint through water-tight, 125 µm strain-ers before working with cup systems

Thinner:

- Aquaplast Purified Water - LVW 010 000 A5- (according to ISO 3696)
- Use an Aquaplast measuring stick.
- An addition of 0 to 5 % Purified Water - LVW 010 000 A5- is sufficient at higher temperatures (greater than +25 °C (77 °F)) and a high relative humidity (greater than 60 %).

Pre-painting:

- With three-coat pearlescent color shades, a special base surface color is required (for applying solid water-based base paint). Each color shade should be determined using the formula information system.
- For pearlescent paints, apply pearl effect water-based base paint.



Application type "coat"

- Processing viscosity at +20 °C (68 °F) material temperature is the mixing viscosity for "Compliant" and "HVLP".



P00-10032



P00-10036

- Add 10 % thinner at +20 °C (68 °F) material temperature.



P00-10023

- Set spray nozzle (see manufacturer's information): "Compliant" 1.2 to 1.3 mm.
- Set spray nozzle (see manufacturer's information): "HVLP" WSB/1.3 mm.
- Set the spray pressure (see manufacturer's information): "Compliant" to 2.0 to 2.5 bar (29.01 to 36.26 psi).
- Set the atomizing pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).



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- An application includes: applying a thin spray application and then a normal spray application. For color shades with special effects, we recommend a “finishing application”.



#### Note

- ◆ For less opaque colors, it may be necessary to apply additional spray applications after the corresponding flash-off time.
- ◆ The layer thickness (including base surface color shade solid water-based base paint) should not exceed 45 µm.

#### Drying

The flash-off time for clear coat application is at +20 °C (68 °F) room temperature for 20 minutes.

For smaller surfaces, the following make it possible to reduce the flash-off time:

- ◆ The painted surfaces can be applied more quickly by blowing them with blower nozzles (hand blowers or with stationary devices).
- ◆ Blowing with a spray gun is also possible after waiting at least five minutes.

For larger surfaces, the following make it possible to reduce the flash-off time:

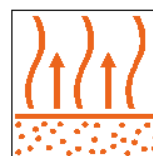
- ◆ The painted surfaces can be applied more quickly by using stationary blowing devices (such as ceiling systems), infrared radiators or oven drying.
- ◆ Ceiling system 10 to 15 minutes
- ◆ IR drying three to five minutes
- ◆ Cooling time a minimum of five minutes



P00-10032



P00-10027



P00-10026



### Oven drying at +60 °C

- ◆ Combination booth at least 10 minutes including heating time
- ◆ Drying-oven at least five minutes.
- ◆ Cooling time a minimum of five minutes



#### Note

*The evaporating and drying times specified here depend on the temperature, humidity, air sink speed in the spray booth and the number of spray applications. Always wait until the painted surface is completely mat.*



P00-10027



## Reworking

Can be painted over with:

- ◆ Two-part HS clear coat from the Volkswagen original paint product line

## Special Instructions



### Note

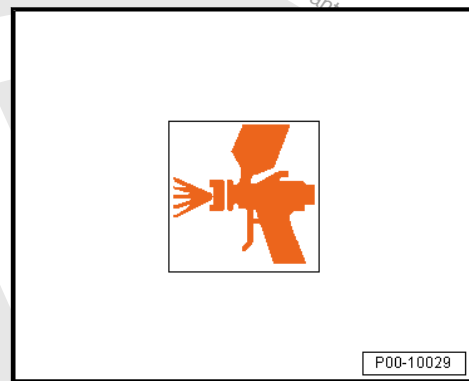
- ◆ *The decision to use two or three coats (with a special base surface color shade), depends on the factory paint.*
- ◆ *Each base surface color tone is indicated in the formula information system.*

Touch-up system (for attaining an optically perfect color shade transition to the adjacent parts)

- Preparation:
  - Sand the filled areas (dry with P400-500 or with water-proof P800-1000 paper).
  - Thoroughly sand the adjacent surfaces with a fine sanding pad.
  - Clean the entire surface thoroughly with Silicone Remover - LVM 020 000 A5- to remove dust, sanding residue and other dirt.
  - Wipe off any residual silicone remover with a lint-free cloth, leaving no streaks.
  - Allow wet-sanded surfaces and cleaned surfaces to dry completely.
- Two-coat pearl effect/heliochrome color shades:
  - Thoroughly cover the filled areas with pearlescent/heliochrome water-based paint which has been prepared for spraying.
  - Expand the scope of each subsequent spray application. This overlapping results in only one misted zone.
  - Expand the run-off area and touch-up with reduced pressure.
  - After an appropriate final flash-off time, paint over with two-part HS clear coat.
- Three-coat pearlescent color shades:
  - Thoroughly cover the filled areas with solid water-based paint (see using base surface color shade) and touch-up with reduced pressure (keep track of the drying time).
  - Using pearlescent water-based paint which has been prepared for spraying, spray the same area again (with reduced pressure) and match it with the original.
  - Blow dry with the pistol after each spray application.

## Using the products

- ◆ The spray devices should be suitable for use with water-soluble products; see manufacturer's information.
- ◆ The mixing paints in this top coat series can only be used within the color tone formulas. When processing individual mixing paints on their own, major deviations from the information given in the application instructions are possible.





### Cleaning the tools

- ◆ Rinse before and after using with Aquaplus Purified Water - LVW 010 000 A5- . Then rinse with Nitro Thinner - LVE 856 000 A3- .

### Disposal

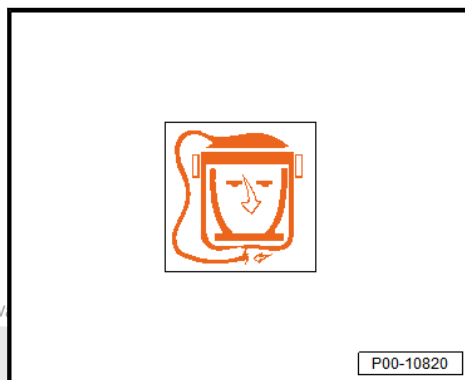
- ◆ Collect liquid waste from water-soluble products and separate from liquid waste from conventional products. When mixing materials, disposal may no longer be possible, which is difficult and costly.

### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

### Characteristics

Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/IIB (d) (420) 420	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 420 g (14.8 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 420 g (14.8 oz)/L.

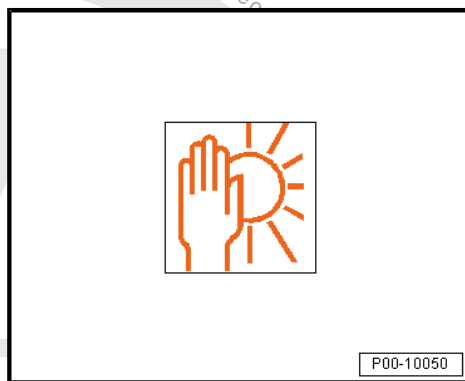


### Storage

The guaranteed shelf life for each product is:

- ◆ Water-Based Pearl Effect Mixed Paint - LWM 076 ...- 24 months from the production date.
- ◆ Water-Based Pearl Effect Base Paint - LPW 040 ...- 18/24 months from the production date.
- ◆ Water-Based Heliochrome Base Paint - LHW 046 ...- 18 months from the production date.

Use all of the products no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).

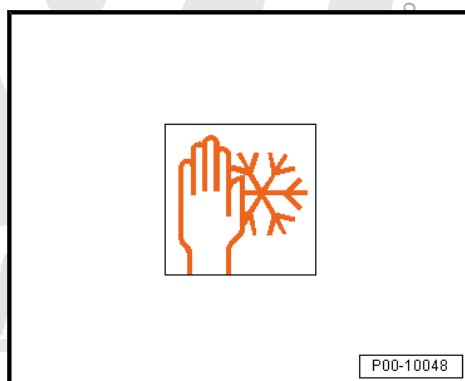


### Storage Conditions

The optimal storage temperature is +20 °C (68 °F) (not to fall below +5 °C (41 °F)).

The preferred temperature is between +15 °C and +25 °C (59 °F and 77 °F).

For short-term storage (approximately 4 weeks), between +5 °C and +35 °C (41 °F and 95 °F) is acceptable.



## 3.7.4 Aquaplus Touch-Up System

### Definition:

- ◆ Touch-Up Additive for Aquaplus - LVM 030 000 A2-



Edition 06/2011

### Product Description

The touch-up Additive for Aquaplus is especially suited for painting Aquaplus water-based base paint. This serves to simplify the touch-up process.

### Application Instructions

#### Base surface

Suitable base surfaces:

- ◆ Primed and filled surfaces (two-part HS filler)
- ◆ Hardened, solvent-resistant, well-preserved and sanded old paint or factory paints

Suitable pre-treatment materials:

- Dependent on the object and base surface, according to our structure recommendations.

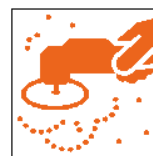
Pre-treatment of base surfaces:

- Clean the factory or old paint or two-part HS filler thoroughly with Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .



P00-10038

- Dry-sand with rotary sander with P400-500 grit and dust extraction or wet-sand with water-resistant P800-1000 grit sandpaper.



P00-10040

- Sand the painted area of the undamaged original paint with P1000-1200 grit sandpaper.



P00-10041

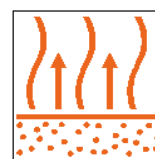


- Use a suitable cleaning agent before again reworking to ensure a clean and residue-free surface.



P00-10038

- Allow wet-sanded surfaces and cleaned surfaces to dry completely.



P00-10026

### Processing

Thinning is not required.

Application type “coat”



P00-10032

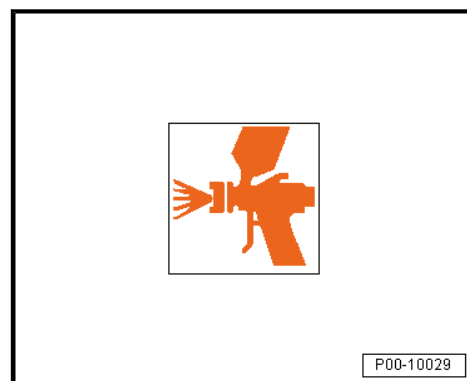
- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211
- The processing viscosity of the product is ready for immediate application.



P00-10036



- Set spray nozzle (see manufacturer's information): "Compliant" 1.2 to 1.3 mm.
- Set spray nozzle (see manufacturer's information): "HVLP" WSB/1.3 mm.
- Set the spray pressure (see manufacturer's information): "Compliant" to 2.0 to 2.5 bar (29.01 to 36.26 psi).
- Set the atomizing pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).

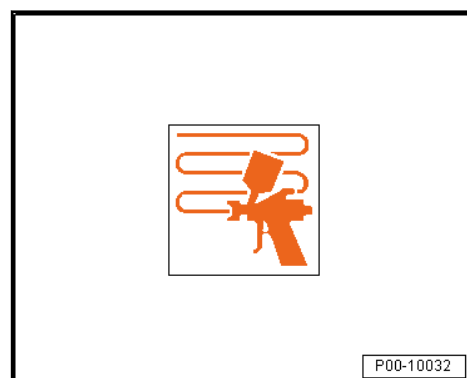


- Depending on the color and covering capacity, apply 3 to 5 spray applications of the adjusted Aquaplus water-based base paint using reduced pressure (0.8-1.5 bar (11.6-21.76 psi)) to the damaged areas.

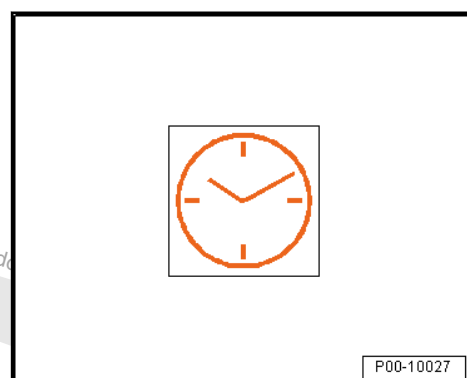


#### Note

*The inlet pressure for this touch-up system should be reduced as described here. Disregard the instructions provided by the manufacturer.*



## Drying

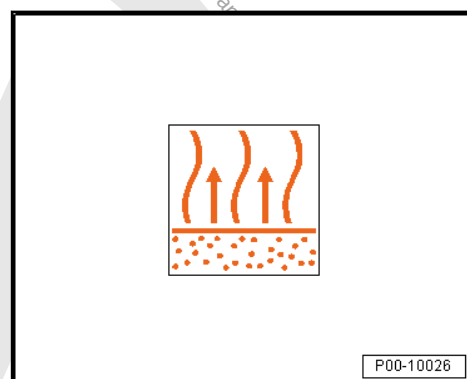


Flash-off time before clear coat application

Let ventilate at +20 °C (68 °F) room temperature for 15 to 20 minutes.

The following make it possible to reduce the flash-off time:

- ◆ The formation of the matte finish on the painted surface can be accelerated by blowing with a blower nozzle or forced drying (OR or oven drying).
- ◆ Blowing with a spray gun is also possible after waiting at least five minutes.
- ◆ The drying time is at least five minutes.





## Reworking

Can be painted over with:

- ◆ Two-Part HS Clear Coat



### Note

*The product should not be used "pure".*

## Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

## Characteristics

Flashpoint:	above +23 °C (73.4 °F)
-------------	------------------------

## Storage

The guaranteed shelf life of Touch-Up Additive for Aquaplus - LVM 030 000 A2- is 24 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).

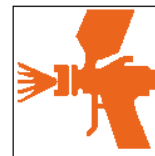
## Storage Conditions

The optimal storage temperature is between +5 °C and +35 °C (41 °F and 95 °F).



### Note

*Temperatures that do not fall within this range can cause damage to the product.*



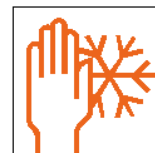
P00-10029



P00-10820



P00-10050



P00-10048

## 3.7.5 Aqua Premium System

### Definition:

- ◆ Water-Based Solid Mixed Paint - LWM 083 ...-
- ◆ Water-Based Metallic/Pearl Effect/Special Effect Mixed Paint - LWM 084/ 086...-
- ◆ Water-Based Solid Base Paint - LWG 055 ...-





- ◆ Water-Based Metallic Base Paint - LWG 056 ...-
- ◆ Water-Based Pearl Effect Base Paint - LWG 057 ...-
- ◆ Flop Control - LWM 085 386 A2-
- ◆ System Components A - LWM 083 385 A3-
- ◆ System Components B - LWM 085 387 A3-

**Edition, 03/2017**

### Product Description

The Aqua premium system is an innovative water-soluble base paint system. The mixing system contains all solid and effect color shades for vehicle repair paintwork.

Characteristics:

- ◆ Easy and to quick process
- ◆ Even impact alignment ensures high certainty of outcome
- ◆ Short process times
- ◆ Easy and safe painting
- ◆ Various application possibilities (interior, multiple-coat and multi-color coats)

### Application Instructions

#### Base surface

Suitable base surfaces:

- ◆ Primed and filled surfaces (two-part HS filler)
- ◆ Intact old paint
- ◆ For plastic surfaces, Glazing Bonding Agent - ALO 822 000 10- + two-part HS filler (elasticized)
- ◆ With Two-Part Plastic Adhesive Filler - LKF 696 009 A2- / Two-Part Plastic Adhesive Filler - LKF 696 040 A2- insulated base surfaces on plastic surfaces
- ◆ See special instructions, refer to ➔ [page 186](#) .

Pre-treatment of base surfaces:

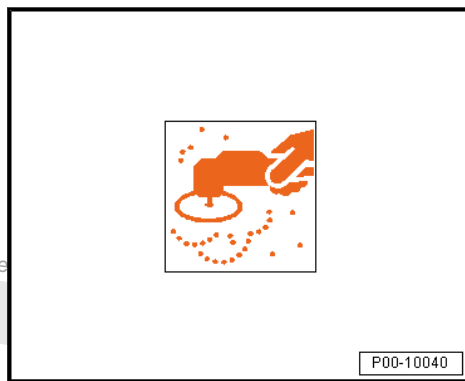
- Clean the factory or old paint or two-part HS filler thoroughly with Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .



P00-10038



- Dry-sand with rotary sander and dust extraction (P500-600 grit).



- Or “wet”-sand with P800-1000 sandpaper.



- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.
- Wipe off any residual silicone remover with a lint-free cloth, leaving no streaks.

#### Special Instructions

- ◆ Sanded-through areas must be insulated with One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2- . The sanded-through areas should not be larger than 5.0 cm in diameter.
- ◆ When using the two-part HS filler, any bare areas must be insulated with Two-Part Wash Primer - LHV 043 000 A2- or One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2- .



#### Standard Application Processing

Mixing containers:

- Plastic containers or tin-coated cans painted on the inside



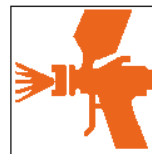
#### Note

*After adding additive, use the material within 24 hours.*



## "Compliant" application type

- Processing viscosity at +20 °C (68 °F) material temperature is the mixing viscosity for "Compliant" and "HVLP".
- For solid colors, add 10 % Additive for Aqua Premium - LVM 035 200 A3/LVM 035 301 A3- at +20 °C (68 °F) material temperature.
- For metallic/pearl effect colors, add 20 % Additive for Aqua Premium - LVM 035 200 A3/LVM 035 301 A3- at +20 °C (68 °F) material temperature.
- Set spray nozzle (see manufacturer's information): "Compliant" 1.2 to 1.3 mm.
- Set spray nozzle (see manufacturer's information): "SATA RP 1.2 / RP 1.2W" / "Devilbiss GTi Pro Lite TE20" 1.2 mm.
- Set spray nozzle (see manufacturer's information): "Compliant" 1.8 to 2.0 bar (26.11 to 29.01 psi).
- Set the atomization pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).



P00-10029



P00-10036



P00-10023



P00-10029



- One application consists of 1.5 spray applications. Apply a normal spray application, then apply a “finish spray application”/effect spray application.



#### Note

*For colors with low coverage properties, after allowing for flash-off time it may be necessary to apply another spray application (wet on dry).*



P00-10032

#### Drying

The flash-off time for a clear coat application should be long enough for the surface to become completely matted.

Can be painted over with:

- ◆ Two-part HS clear coat (see data sheet of the respective product)

**For smaller surfaces, the following make it possible to reduce the flash-off time:**

- ◆ The painted surfaces can be applied more quickly by blowing them with blower nozzles (hand blowers or with stationary devices).
- ◆ Blowing with a spray gun is also possible after waiting at least five minutes.

For larger surfaces, the following make it possible to reduce the flash-off time:

- ◆ The painted surfaces can be applied more quickly by using stationary blowing devices (such as ceiling systems), infrared radiators or oven drying.

#### Three layer color processing and multi-color paintwork

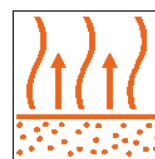
Hardener:

- Aqua Premium Hardener - LVM 045 000 A1-

Additives:

(at high temperature and low humidity)

- Additive for Aqua Premium - LVM 035 301 A3-
- Use Aqua premium measuring stick for three coat colors.



P00-10026



P00-10027



#### Note

*After adding additive, use the material within 24 hours.*

Curing Time:

- Solids colors at +20 °C (68 °F) room temperature for 90 to 120 minutes.
- Effect colors at +20 °C (68 °F) room temperature for 45 to 60 minutes.



## "Compliant" application type

- Processing viscosity at +20 °C (68 °F) material temperature is the mixing viscosity for "Compliant" and "HVLP".
- For three layer colors in primary shade only, add 5 % Aqua Premium Hardener - LVM 045 000 A1- .

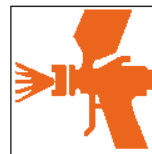
- For solid colors, add 10 % Additive for Aqua Premium - LVM 035 301 A3- at +20 °C (68 °F) material temperature.
- For metallic/pearl effect colors, add 20 % Additive for Aqua Premium - LVM 035 301 A3- at +20 °C (68 °F) material temperature.

- Set spray nozzle (see manufacturer's information): "Compliant" 1.2 to 1.3 mm.

Set spray nozzle (see manufacturer's information): "SATA RP 1.2 / RP 1.2W" / "Devilbiss GTi Pro Lite TE20" 1.2 mm.

- Set spray nozzle (see manufacturer's information): "Compliant" 1.8 to 2.0.

- Set the atomization pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).



P00-10029



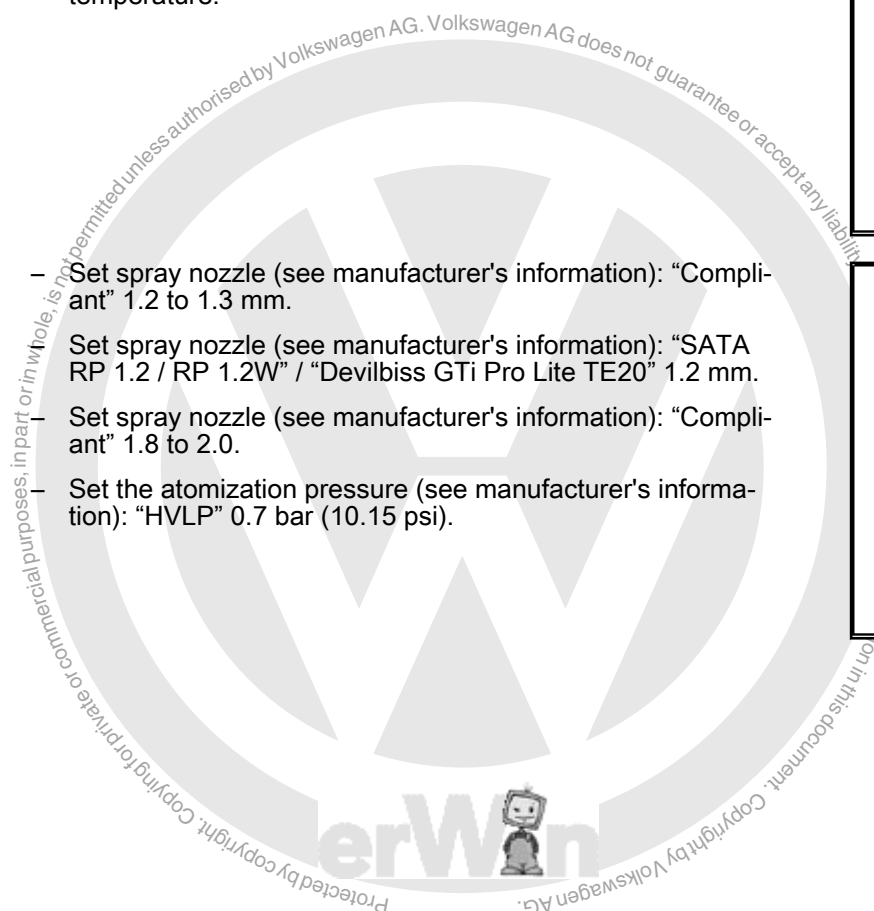
P00-10036



P00-10023



P00-10029





- One application consists of 1.5 spray applications. Apply a normal spray application, then apply a “finish spray application”/effect spray application.



#### Note

*For colors with low coverage properties, after allowing for flash-off time it may be necessary to apply another spray application (wet on dry).*

## Drying

The flash-off time for a clear coat application should be long enough for the surface to become completely matted (without blowing).

- ◆ The ventilation time should take place assisted with blowing devices at 20 to 40 °C (68 to 104 °F) for 5 to 10 minutes until the surface becomes completely matted.
- ◆ The final ventilation time is at 60 to 65 °C (140 to 149 °F) for 10 to 15 minutes. Let the foundation cool off before applying the effect.



#### Note

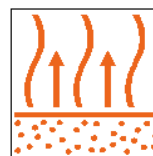
*For multi-color paintwork, the recommended tape is the »blue couture tape«.*



P00-10032



P00-10027



P00-10026



## Reworking

Can be painted over with:

- ◆ Effect color
- ◆ Two-part HS clear coat up to maximum of 72 hours after applying the base paint

## Processing interior paintwork without applying clear coat

Application:

- ◆ Application areas are the vehicle interior, for example engine compartment and luggage compartment inner sides, where satin-finish and resistant surface without additional clear coating is desired.

Hardener:

- Aqua Premium Hardener - LVM 045 000 A1-

Additives:

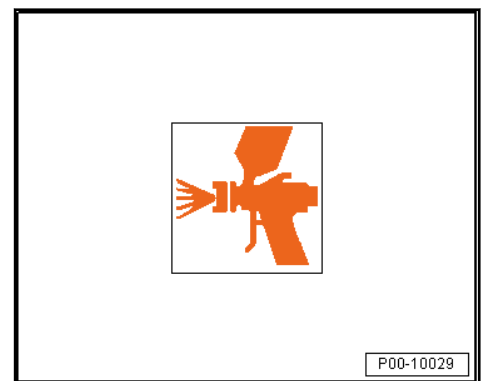
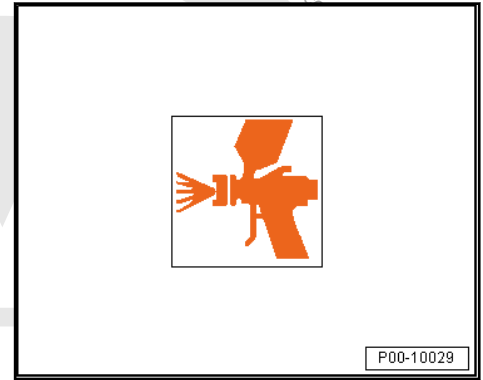
(at a normal/high temperature and low humidity depending on the respective object size)

- Additive for Aqua Premium - LVM 035 200 A3-
- Additive for Aqua Premium - LVM 035 301 A3-
- Use an Aqua premium measuring stick for the interior paintwork.

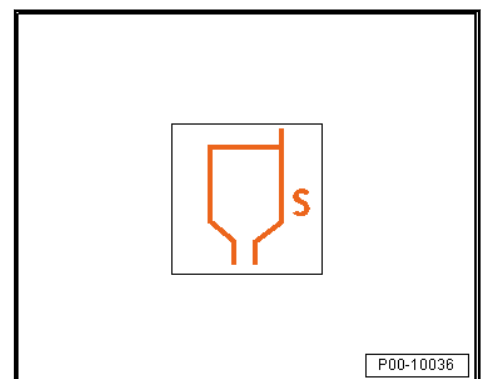
Curing Time:

- Solid colors at +20 °C (68 °F) room temperature for 45 to 60 minutes
- Effect colors at +20 °C (68 °F) room temperature for 30 to 60 minutes.

“Compliant” application type



- Processing viscosity at +20 °C (68 °F) material temperature is the mixing viscosity for “Compliant” and “HVLP”.
- Add 10 % Aqua Premium Hardener - LVM 045 000 A1- to the color.





- For solid colors, add 10 % Additive for Aqua Premium - LVM 035 200 A3/LVM 035 301 A3- at +20 °C (68 °F) material temperature.
- For metallic/pearl effect colors, add 20 % Additive for Aqua Premium - LVM 035 200 A3/LVM 035 301 A3- at +20 °C (68 °F) material temperature.

- Set spray nozzle (see manufacturer's information): "Compliant" 1.2 to 1.3 mm
- Set spray nozzle (see manufacturer's information): "SATA RP 1.2 / RP 1.2W" / "Devilbiss GTi Pro Lite TE20" 1.2 mm.
- Set spray nozzle (see manufacturer's information): "Compliant" 1.8 to 2.0.
- Set the atomization pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).

- One application consists of 1.5 spray applications. Apply a normal spray application, then apply a "finish spray application"/effect spray application.



#### Note

*For colors with poor covering properties, after allowing for flash-off time it may be necessary to apply another spray application (wet in wet).*



P00-10023



P00-10029



P00-10032





## Drying

Let air dry overnight at +20 °C (68 °F) room temperature.

Alternatively, the drying can take place at 60-65 °C (140-149 °F) for 15 to 20 minutes (oven drying).

## Special Instructions

### Using the products

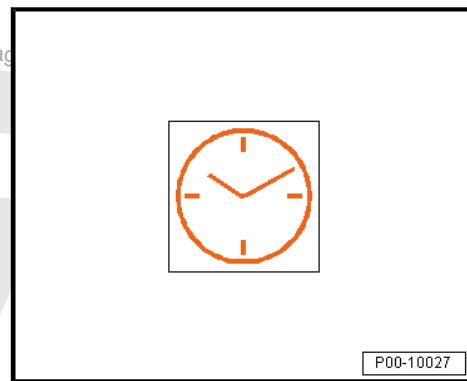
- ◆ The spray devices should be suitable for use with water-soluble products; see manufacturer's information.
- ◆ The mixing paints in this top coat series can only be used within the color tone formulas. When processing individual mixing paints on their own, major deviations from the information given in the application instructions are possible.
- ◆ Do not let the mixer mix for more than 2 x 15 minutes within 24 hours.
- ◆ The material should be room temperature (18 through 25 °C) before use.
- ◆ New unopened mixed paint containers should be appropriately mixed before use.
- ◆ Filter the Aqua Premium Water-Based Base Paint before working with the cup systems (for example SATA or 3M) through water-resistant 125 µm quick strainer.
- ◆ All equipment items, that come in contact with these products, must be approved for water based products.
- ◆ It is possible to shorten the flash-off time by using a blower nozzle or blower gun, booth air nozzle system or raising the temperature.
- ◆ Pay attention to the additional heating time to the object temperature.
- ◆ All specified ventilating and flash-off times, are in relationship to the relevant humidity and the type of blowing device.
- ◆ After adding Aqua-Premium Additive - LVM 035 200/301- the material must be used within a work day.
- ◆ Aqua Premium Water-Based Base Paint , hardened or unhardened must be covered with clear coat within 72 hours.
- ◆ Ready-to-use Aqua Premium Water-Based Base Paint , which is not activated and be used within 6 months. Before use it must be refreshed with adding the same mixture ratio Aqua-Premium Additive - LVM 035 200/301- . It is recommended to spray a sample card before spraying the vehicle. The new addition of Aqua-Premium Additive - LVM 035 200/301- can influence the coverage.

### Cleaning the tools

- ◆ Rinse before and after using with Aquaplast Purified Water - LVW 010 000 A5- . Then rinse with Nitro Thinner - LVE 856 000 A3- .

### Disposal

- ◆ Collect liquid waste from water-soluble products and separate from liquid waste from conventional products. When mixing materials, disposal may no longer be possible, which is difficult and costly.





### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

### Characteristics

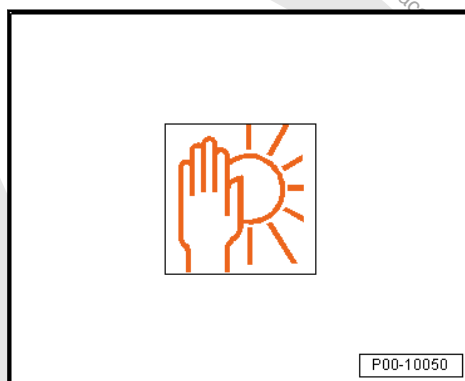
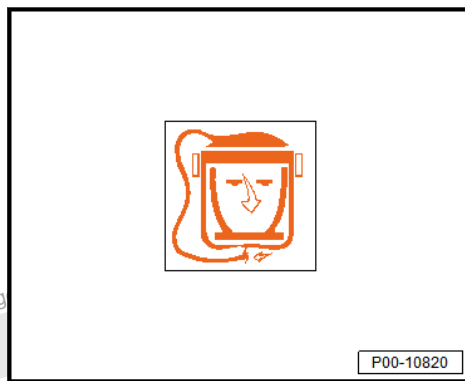
Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/ IIB(d) (420)420	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 420 g (14.8 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 420 g (14.8 oz)/L.

### Storage

The guaranteed shelf life for each product is:

- ◆ 48 months from date of manufacture for Water-Based Solid Mixed Paint - LWM 083 ...- (exception: 24 to 36 months from date of manufacture for: -LWM 083 328-, - LWM 083 331-, -LWM 083 150- and Chestnut - LWM 083 332- ), (exception: 48 months from date of manufacture for: Super-Deep Black - LWM 083 388 A2- ).
- ◆ 24 months from date of manufacture for Water-Based Metallic/Pearl Effect/Special Effect Mixed Paint - LWM 084 ...- .
- ◆ Silver Mixed Paint - LWM 084 / 086...- 24 months from production date.
- ◆ Pearlescent Mixed Paints - LWM 084 / 086...- 36 months from production date.
- ◆ Aqua Premium Solid Color/Base Paint - LWG 055 ...- 24 months from date of manufacture.
- ◆ Water-Based Metallic Base Paint - LWG 056 ...- 18/24 months from the production date.
- ◆ Water-Based Pearl Effect Base Paint - LWG 057 ...- 18/24 months from the production date.
- ◆ Additive for Aqua Premium - LVM 035 200 /LVM 035 301- 24 months from date of manufacture
- ◆ Flop Control - LWM 085 386- 48 months from date of manufacture
- ◆ System Component A - LWM 083 385 A3- 24 months from date of manufacture
- ◆ System Component B - LWM 085 387 A3- 24 months from date of manufacture
- ◆ Touch-Up Additive For Aqua Premium - LWM 035 100 / 110- 24 months from production date.
- ◆ Hardener for Aqua-Premium - LWM 045 000- 24 months from production date.

Use all of the products no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



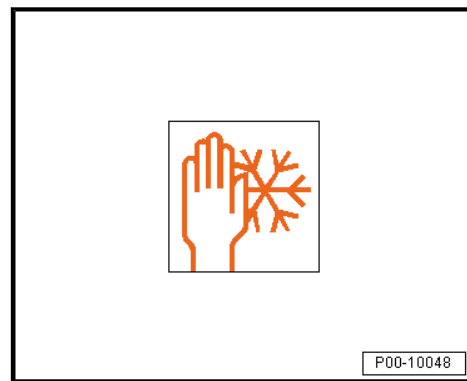


### Storage Conditions

The optimal storage temperature is +20 °C (68 °F).

The preferred temperature is between +15 °C and +25 °C (59 °F and 77 °F).

For short-term storage (a few days), between +5 °C and +35 °C (41 °F and 95 °F) is acceptable.



## 3.7.6 Aqua Premium Touch-Up System

### Definition:

- ◆ Touch-Up Additive For Aqua Premium - LVM 035 100 A3-

Edition 10/2012

### Product Description

To achieve an optically flawless color shade transition in the blended area or adjacent parts, for example fender or door.

### Application Instructions

#### Base surface

Suitable base surfaces:

- ◆ Primed and filled surfaces (two-part HS filler)
- ◆ Intact old paint
- ◆ With Two-Part Plastic Adhesive Filler - LKF 696 009 A2- / Two-Part Plastic Adhesive Filler - LKF 696 040 A2- insulated base surfaces on plastic surfaces
- ◆ See special instructions, refer to ➔ [page 196](#) .

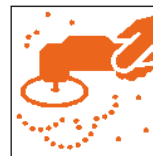
#### Pre-treatment of base surfaces:

- Clean the factory or old paint or two-part HS filler thoroughly with Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .





- Dry-sand with rotary sander with 500 grit and dust extraction or wet-sand with water-resistant P800-1000 grit sandpaper.



P00-10040

- Sand the bordering area/part around the repair area thoroughly with an ultrafine P1000-3000 sanding pad. If beading, edges or grip recesses are present, use a sanding pad beforehand.



P00-10041

- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.
- Wipe off any residual silicone remover with a lint-free cloth, leaving no streaks.



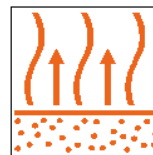
P00-10038

- Allow wet-sanded surfaces and cleaned surfaces to dry completely.

When using a tack cloth, use next generation of cloths with an effective light adhesive formula to minimize the risk of chemical or adhesive residue (for example, Duster - VAS 6177- ). Refer to ⇒ ["4.2.1 Duster VAS 6177", page 394](#) .

### Special Instructions

- ◆ Sanded-through areas must be insulated with One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2- . The sanded-through areas should not be larger than 5.0 cm in diameter.
- ◆ When using the two-part HS filler, any bare areas must be insulated with Two-Part Wash Primer - LHV 043 000 A2- or One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2- .



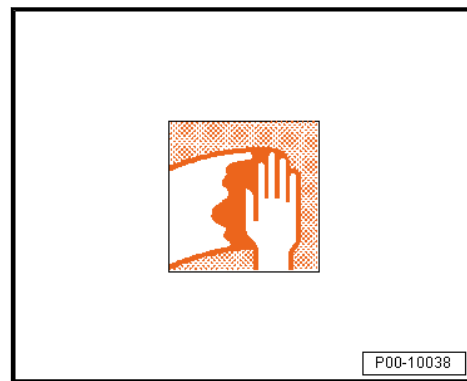
P00-10026



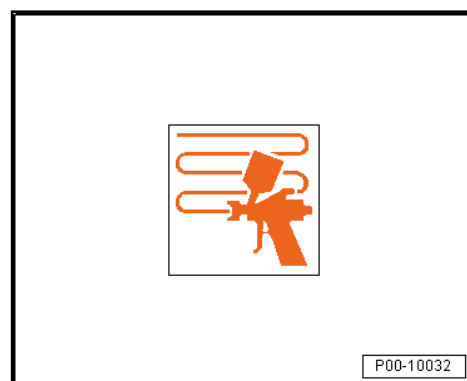
## Processing/repair process

Touch-up painting inside surface, for example side component:

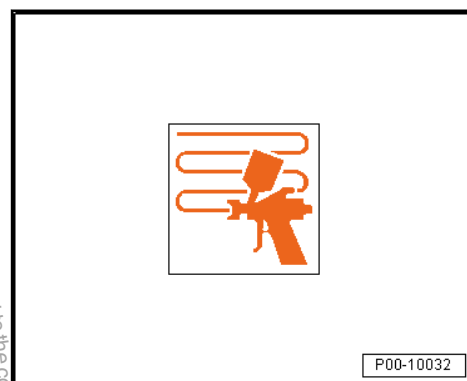
- Pre-treating the base surface. Refer to ➤ [page 195](#) .



- Apply one to two complete spray applications of the Touch-Up Additive For Aqua Premium - LVM 035 100 A3- with normal pressure in each touch-up area around the repair area.



- Apply the first spray application of the adjusted water-based base paint to the repair area up to the edge of the wet touch-up additive. Immediately after that, apply the half effect/finish spray application onto the wet touch-up additive from a distance.



### Note

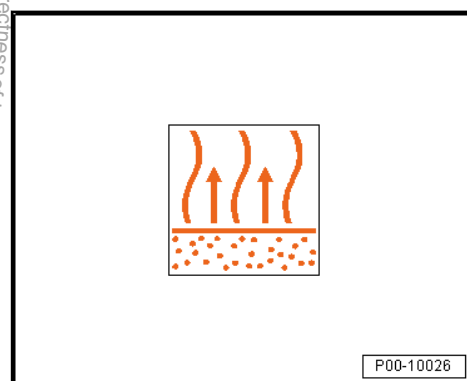
*When doing so, make sure that the touch-up area is larger/wider than the repair area and that it lies on the wet Touch-Up Additive For Aqua Premium - LVM 035 100 A3- .*

- After ventilating, apply a two-part HS clear coat over the entire repair surface.



### Note

- ◆ While processing the Aqua premium water-based base paint, the spray gun material flow/trigger remains completely open.
- ◆ The spraying pressure for the effect spray application can vary between 1.5 and 2.0 bar (21.76 and 29.01 psi) depending on the size of the object.





Touching-up minimal damage for example clever repair.

- Pre-treating the base surface. Refer to ➔ [page 195](#) .



#### Note

*The repair/filler area should be kept as small as possible.*

Possibility »a«:

- ◆ For most colors, use the adjusted water-based base paint.

Possibility »b« (recommended for colors with a high percentage of metallic component):

- ◆ Adjust the Aqua premium water-based base paint in a 1:1 ratio with Touch-Up Additive for Aqua Premium - LVM 035 100 A3- + 10 % Flop Control - LWM 085 386 A2- ( Additive For Aqua Premium - LVM 035 200/301 ...- is not required).
- ◆ Use the Aqua premium measuring stick for clever repair to adjust the mixing ratio.
- Depending on the color and covering capacity, apply 3 to 5 light spray applications of this mixture with reduced pressure (0.8 to 1.5 bar (11.6 to 21.76 psi)) to the repair area/run-off area.



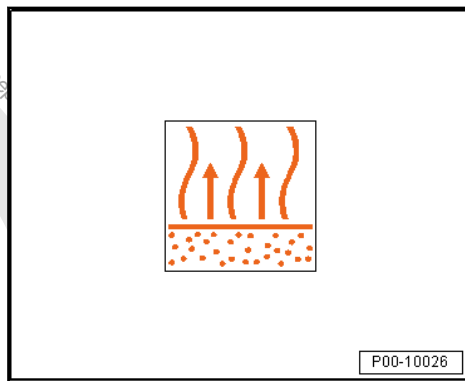
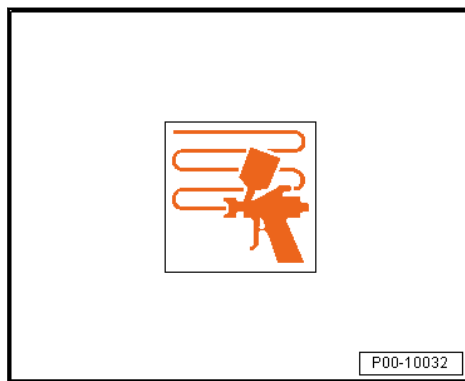
#### Note

*Make sure that each spray application is performed a little bit further and ventilated to form a matte finish. The flash-off time can be accelerated by »blowing«.*

- After an appropriate final flash-off time, paint over with two-part HS clear coat.

Touching-up three layer colors:

- Pre-treating the base surface. Refer to ➔ [page 195](#) .



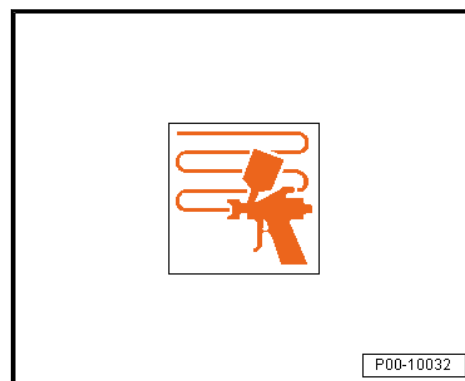


- Apply the primary color shade, adjusted for the 5 % Aqua Premium Hardener - LVM 045 000 A1- and 10 % Additive For Aqua Premium - LVM 035 200 A3/LVM 035 300 ...- for solid colors or 20 % Additive For Aqua Premium - LVM 035 200 A3/LVM 035 300 ...- for effect colors, onto the repair area and on the bordering touch-up area up to the covering capacity.



#### Note

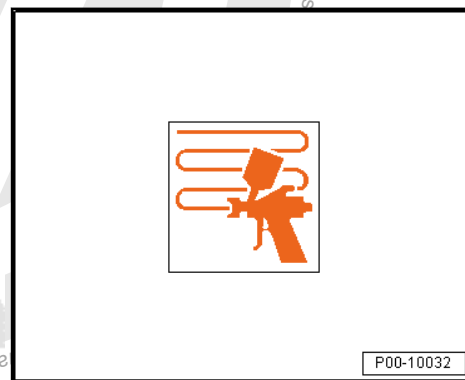
- ◆ *Test spraying on sheet metal is recommended.*
- ◆ *Use the Aqua premium measuring stick for three coat colors to adjust the mixing ratio.*
- ◆ *Observe the drying times.*



- Apply one to two complete spray applications of the Touch-Up Additive For Aqua Premium - LVM 035 100 A3- with normal pressure to each base color run-out area or bordering component.
- Apply going from the run-out area to the repair area. This means, apply the first effect color spray application in the run-out area to the Touch-Up Additive For Aqua Premium - LVM 035 100 A3- ("wet in wet").



- Then paint the next effect color layer near the repair area.
- For some effect color, it is necessary to apply two to three more spray application to achieve the desired optical effect. Normally, apply spray applications "wet-in-wet" and without intermediate ventilation.



#### Note

- ◆ *Starting with the first spray application, it is recommended to even out the subsequent repair area/base color spray applications starting from the touch-up area that is farthest out. For that reason, the subsequent spray applications should always be remain inside the previous spray application, in order to avoid visible contours/shadows.*
- ◆ *For a better assessment, it is recommended to test spray on sheet metal before every spray application.*



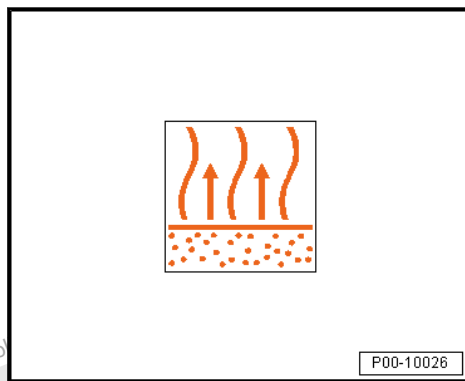


- After ventilating, apply a two-part HS clear coat over the entire repair surface.



#### Note

- ♦ While processing the Aqua premium water-based base paint, the spray gun material flow/trigger remains completely open.
- ♦ The spraying pressure for the effect spray application can vary between 1.5 and 2.0 bar (21.76 and 29.01 psi) depending on the size of the object.
- ♦ For efficient ventilating and drying, stationary blowing devices or forced drying (for example oven drying) are recommended.



#### Using the products

- ♦ The spray devices should be suitable for use with water-soluble products; see manufacturer's information.
- ♦ The mixing paints in this top coat series can only be used within the color tone formulas. When processing individual mixing paints on their own, major deviations from the information given in the application instructions are possible.

#### Cleaning the tools

- ♦ Rinse before and after using with Aquaplast Purified Water - LVW 010 000 A5- . Then rinse with Nitro Thinner - LVE 856 000 A3- .

#### Disposal

- ♦ Collect liquid waste from water-soluble products and separate from liquid waste from conventional products. When mixing materials, disposal may no longer be possible, which is difficult and costly.

#### Health protection

- ♦ Wear a breathing mask when using water-soluble products.

### 3.7.7 Aqua Premium System (Rim Paintwork)

#### Definition:

- ♦ Water-Based Metallic Base Paint - LWG 056 1H7 A1-

#### Edition 04/2013

#### Product Description

Description of rim paintwork using Water-Based Metallic Base Paint - LWG 056 1H7 A1- .

#### Characteristics:

- ♦ High stability under load
- ♦ High covering capacity
- ♦ Can be painted over with two-part HS clear coat
- ♦ VOC compliant





## Note

*After painting over with two-part HS clear coat it produces a high-gloss, weatherproof top coat.*

## Application Instructions

### Base surface

Suitable base surfaces:

- ◆ Primed or filled surfaces with Two-Part HS Vario Filler - LGF 786 004 A4- , gray
- ◆ Factory or old paint (excluding thermoplastic coatings)

Pre-treatment of base surfaces:

- Thoroughly clean factory or old paint using Silicone Remover - LSW 019 000 A5- , or beforehand with Silicone Remover, Long - LVM 020 100 A5- if very dirty.

- Dry-sand with rotary sander and dust extraction (P1000-1500 grit).
- Sand spokes, corners and edges by hand with an Ultra-Fine/P3000 sanding pad.

- Before reworking, carefully clean the sanded base surfaces of dust, sanding residue and other dirt with Silicone Remover - LSW 019 000 A5- . If very dirty, clean beforehand using Silicone Remover, Long - LVM 020 100 A5- .

### Processing

Pretreatment of base surfaces (filler leveling):

- Bare areas must be primed with Two-Part Wash Primer - LHV 043 000 A2- when using Two-Part HS Vario Filler - LGF 786 004 A4- .
- It is essential to have even base surfaces that are free of sanded-through areas.



P00-10038



P00-10040



P00-10038



- Dry-sand with rotary sander and dust extraction (P500 grit).



P00-10040

- Wet-sand with P800-1000 grit sandpaper.

Clear coat on the filler:

- Apply two-part HS clear coat on the sanded filler. Depending on the size of the repair area or if there are many repair areas, it is recommended to apply two-part HS clear coat to the entire rim.



P00-10041

- Apply a preliminary spray application (approximately 20 µm).



P00-10032

Forced dry at +60 °C (140 °F) object temperature for 20 to 25 minutes



P00-10027



#### Clear coat sanding:

- Dry-sand with rotary sander and dust extraction (P1000-1500 grit).
- Sand spokes, corners and edges by hand with an Ultra-Fine/P3000 sanding pad.



P00-10040

#### Cleaning:

- Before reworking the sanded base surfaces, carefully clean them again of dust, sanding residue and other dirt with Silicone Remover - LVM 020 000 A5-



P00-10038

#### Base paint application "spray application"

The following materials can be used as additives:

- ◆ Additive for Aqua Premium - LVM 035 301-



P00-10029

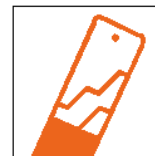
- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211
- Processing viscosity 4 mm at +20 °C (68 °F) material temperature is the mixing viscosity for "Compliant" and "HVLP".



P00-10036



- Add 50 % Additive for Aqua Premium - LVM 035 301- at +20 °C (68 °F) material temperature.



P00-10023

- Set spray nozzle (see manufacturer's information): "Compliant" 1.2 to 1.3 mm.
- Set spray nozzle (see manufacturer's information): "HVLP" 1.2 to 1.3 mm.
- Set spray pressure (see manufacturer's information): "Compliant" to 2.0 bar (29.01 psi).
- Set the atomizing pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).



P00-10029

- One work procedure contains 1.5 spray applications (one normal, preliminary spray application followed by a light spray application while standing back from the object).



P00-10032



#### Note

- ◆ The best results are achieved when using a 1.3 mm HVLP spray gun.
- ◆ Additive for Aqua Premium - LVM 035 200 A3- / -LVM 035 301 A3- should be added immediately before applying the Water-Based Metallic Base Paint - LWG 056 1H7 A1- . The best result is achieved when the mixture is used within a working day.

#### Drying

Flash-off time before clear coat application



P00-10027



Ventilate at +20 °C (68 °F) room temperature until matted.



#### Note

- ◆ *The best results are achieved when using a 1.3 mm HVLP spray gun.*
- ◆ *Additive for Aqua Premium - LVM 035 301- should be added immediately before applying the Water-Based Metallic Base Paint - LWG 056 1H7 A1- silver. The best result is achieved when the mixture is used within a working day.*

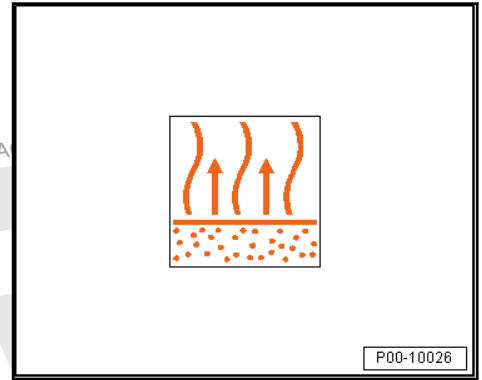
The following make it possible to reduce the flash-off time:

- ◆ The formation of the matte finish on the painted surface can be accelerated by blowing with a blower nozzle or forced drying (OR or oven drying).
- ◆ Blowing with a spray gun is also possible after waiting at least five minutes.
- ◆ The drying time is at least five minutes.



#### Note

*The evaporating and drying times specified here depend on the temperature, humidity, air sink speed in the spray booth and the number of spray applications. Always wait until the painted surface is completely mat.*





## Reworking

Can be painted over with:

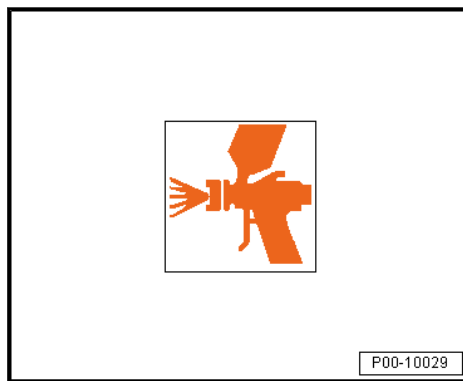
- ◆ Two-part HS clear coat (elasticized)

## Special Instructions



### Note

*Touch-up with Water-Based Metallic Base Paint - LWG 056 1H7 A1- in one to two normal spray applications. Apply the Touch-Up Additive For Aqua Premium - LVM 035 100 A3- to the run-out area.*



## Using the products

- ◆ The spray devices should be suitable for use with water-soluble products; see manufacturer's information.
- ◆ The mixing paints in this top coat series can only be used within the color tone formulas. When processing individual mixing paints on their own, major deviations from the information given in the application instructions are possible.

## Cleaning the tools

- ◆ Rinse before and after using with Aquaplast Purified Water - LVW 010 000 A5- . Then rinse with Nitro Thinner - LVE 856 000 A3- .

## Disposal

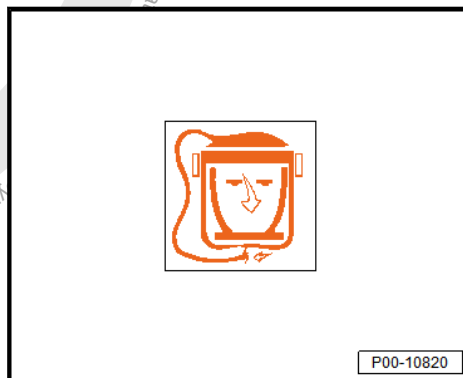
- ◆ Collect liquid waste from water-soluble products and separate from liquid waste from conventional products. When mixing materials, disposal may no longer be possible, which is difficult and costly.

## Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

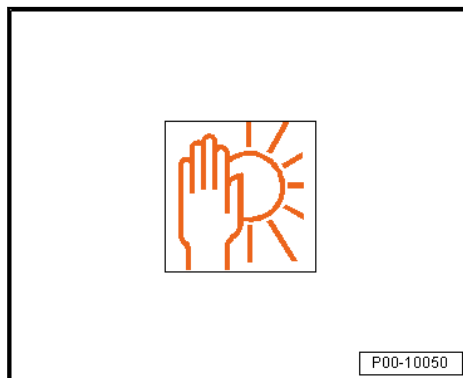
## Characteristics

Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/IIB (d) (420) 420	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 420 g (14.8 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 420 g (14.8 oz)/L.



## Storage

The guaranteed shelf life of Water-Based Metallic Base Paint - LWG 056 1H7 A1- is 24 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).





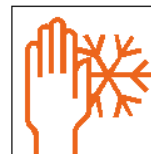
## Storage Conditions

The optimal storage temperature is between +5 °C and +35 °C (41 °F and 95 °F).



### Note

*Temperatures that do not fall within this range can cause damage to the product.*



P00-10048

## 3.8 Clear Coats

⇒ ["3.8.1 Two-Part HS Clear Coat", page 207](#)

⇒ ["3.8.2 Two-Part MS Matte Clear Coat", page 213](#)

⇒ ["3.8.3 Two-Component Clear Coat, Matte and Satin Finish", page 217](#)

⇒ ["3.8.4 Two-Part HS Optimum Clear Coat", page 223](#)

⇒ ["3.8.5 Two-Part HS Optimum Plus Clear Coat", page 227](#)

⇒ ["3.8.6 Two-Part Brilliant Clear Coat", page 231](#)

⇒ ["3.8.7 Two-Part HS Brilliant Plus Clear Coat", page 235](#)

⇒ ["3.8.8 Two-Part HS Performance Clear Coat", page 240](#)

⇒ ["3.8.9 Two-Component HS Race Clear Coat", page 244](#)

⇒ ["3.8.10 Blender", page 248](#)

⇒ ["3.8.11 Race Blender", page 252](#)

### 3.8.1 Two-Part HS Clear Coat

#### Definition:

- ◆ Two-Part HS Clear Coat - L2K 769 500 A5-

Edition 10/2012

#### Product Description

Two-part HS clear coat is a VOC compliant, high-quality high solid clear coat.

#### Characteristics:

- ◆ Easy to process
- ◆ Variable uses for two-part HS and two-part VHS hardeners
- ◆ Good spreading properties
- ◆ Brilliant surface finish

#### Application Instructions

##### Base surface

Suitable preliminary coatings:

- ◆ Water-based base paints

Suitable pre-treatment materials:

- Dependent on the object and base surface, according to our structure recommendations.



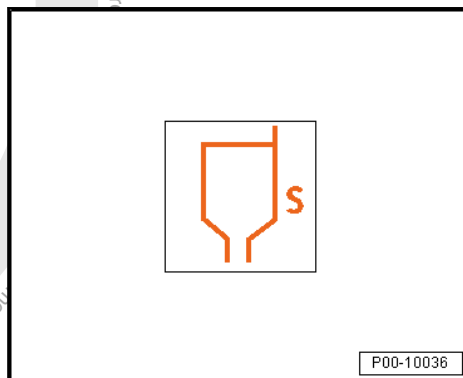
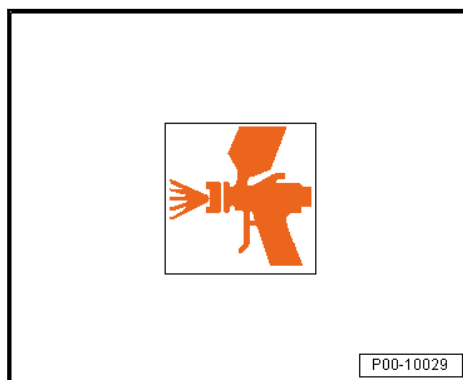
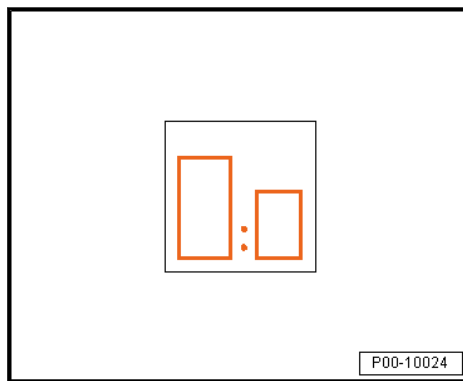
## Processing with two-part HS hardeners

Mixture ratio:

- 2:1 by volume with:
- ◆ Two-Part HS Hardener - LHA 009 041 A3-
- ◆ Two-Part HS Hardener, Short - LHA 021 004 A3-
- ◆ Two-Part HS Hardener, Extra Short - LHA 009 046 A2-
- ◆ Two-Part HS Hardener, Long - LHA 009 047 A3-
- ◆ Two-Part HS Hardener, Extra Long - LHA 009 048 A3-
- ◆ See technical application information two-part HS hardener.  
Refer to ➤ [“3.9.1 Two-Part HS Hardener”, page 254](#) .

Working time/pot life:

- Ready for spraying in 90 minutes at +20 °C (68 °F)



Application type “coat”

- Processing viscosity at +20 °C (68 °F) material temperature is the mixing viscosity for “Compliant” and “HVLP”.





- Set the spray nozzle (see manufacturer's information):  
“Compliant” 1.3 to 1.4 mm.
- Set spray nozzle (see manufacturer's information): “HVLP”  
1.3 to 1.5 mm.
- Set the spray pressure (see manufacturer's information):  
“Compliant” to 2.0 to 2.5 bar (29.01 to 36.26 psi).
- Set the atomizing pressure (see manufacturer's information):  
“HVLP” 0.7 bar (10.15 psi).

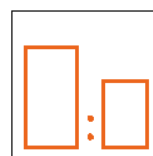
- The recommended dry layer thickness is between 50 and 60 µm.



P00-10029



P00-10032



P00-10024

### Processing with two-part VHS hardeners

Mixture ratio:

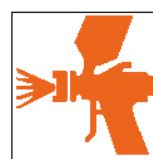
- 3:1 by volume with:
- ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5-
- ◆ Two-Part VHS Hardener, Short - LHA 009 050 A2-
- ◆ Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3-
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-
- ◆ See technical application information for the two-part VHS hardener. Refer to ⇒ [“3.9.2 Two-Part VHS Hardener and Two-Part VHS Performance Hardener”, page 258](#).

Thinner:

- ◆ Two-Part Thinner, Special - LVM 009 200 A2- / -LVM 009 200 A5-

Working time/pot life:

- Ready to spray in 60 to 90 minutes at +20 °C (68 °F)



P00-10029



Application type "coat"

- Processing viscosity at +20 °C (68 °F) material temperature is the mixing viscosity for "Compliant" and "HVLP".
- Add 12.5 to 15 % Two-Part Thinner, Special - LVM 009 200 A2- -LVM 009 200 A5- .
- Set the spray nozzle (see manufacturer's information):  
"Compliant" 1.3 to 1.4 mm.
- Set spray nozzle (see manufacturer's information): "HVLP"  
1.3 to 1.5 mm.
- Set the spray pressure (see manufacturer's information):  
"Compliant" to 2.0 to 2.5 bar (29.01 to 36.26 psi).
- Set the atomizing pressure (see manufacturer's information):  
"HVLP" 0.7 bar (10.15 psi).



P00-10032



P00-10036



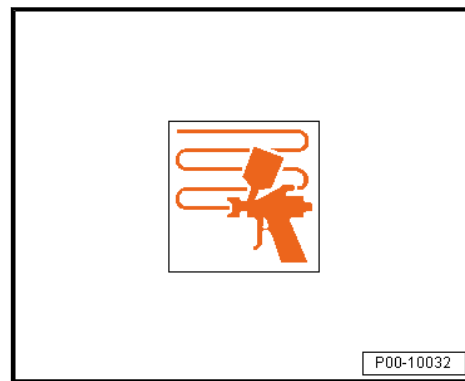
P00-10023



P00-10029



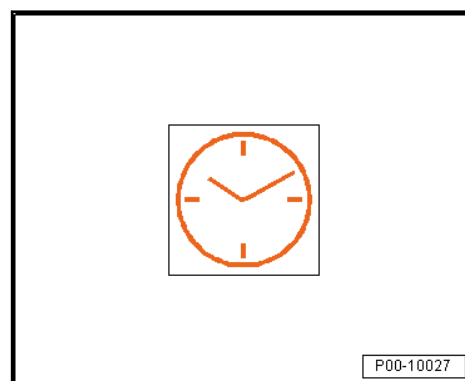
- 1.5 spray applications are required to get the recommended dry layer thickness of between 50 and 60 µm.



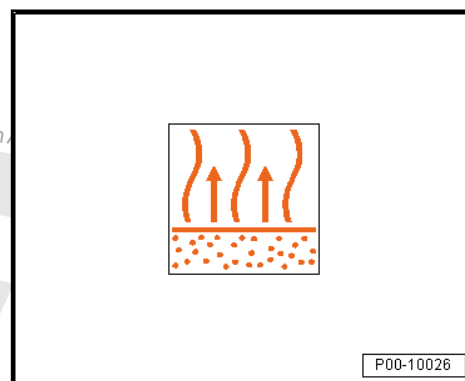
### Drying

Air dry at +20 °C (68 °F) room temperature:

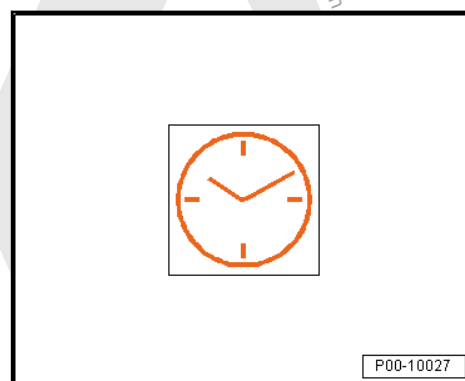
- ◆ Dust dry after 40 to 50 minutes
- ◆ Ready for assembly after four to six hours
- ◆ Dry overnight



The flash-off time with forced drying is at least 5 to 10 minutes.

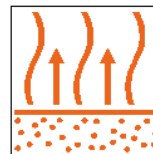


Forced dry at +60 °C (140 °F) object temperature for 30 to 40 minutes





Final flash-off time for IR drying is at least five minutes.



P00-10026

IR dry with a short-wave heater for 10 to 15 minutes and with a medium-wave heater for 15 to 20 minutes

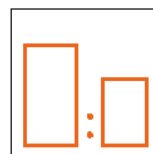


P00-10028

### Special Instructions

Elastification for rigid and semi-rigid plastics:

- ◆ The base material must first be mixed with 15 % Two-Part Elastic Additive - ALZ 011 001- .
- ◆ Mixture with two-part HS hardeners, 2:1
- ◆ Mixture with two-part VHS hardeners, 3:1 with 15 % thinner (drying period is lengthened).



P00-10024

### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

### Characteristics

Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/IIIB (d) (420) 420	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 420 g (14.8 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 420 g (14.8 oz)/L.

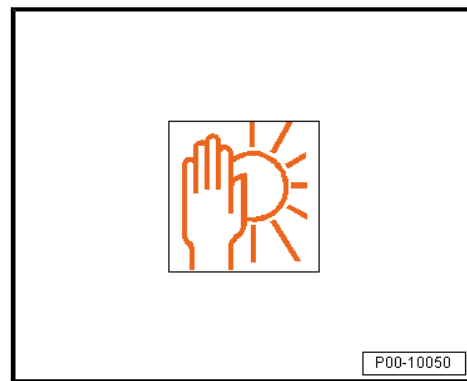


P00-10020



## Storage

The guaranteed shelf life of Two-Part HS Clear Coat - L2K 769 500 A5- is 48 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



## 3.8.2 Two-Part MS Matte Clear Coat

### Definition:

- ◆ Two-Part MS Matte Clear Coat - L2K 769 020 A2-

Edition 08/2013

### Product Description

Two-part MS matte clear coat is a clear coat from the two-part acrylic system.

#### Characteristics:

- ◆ High elasticity
- ◆ Matted adjustment
- ◆ Can be cured with HS and VHS products
- ◆ Gloss grade adjustments with two-part HS clear coats are possible.
- ◆ Ideally suited for painting plastic
- ◆ Sanding and polishing of the sand is not possible, because the surface will be glossy from repairs.
- ◆ No spot repair!
- ◆ Chemical resistance is limited compared to production paint.
- ◆ Do not use paint cleaner, sanding/polishing products, or gloss-preserving wax for paint care.
- ◆ Do not use resinous, fatty or oily substances come into contact with the paint.
- ◆ Only use brushless car wash.
- ◆ Only washing programs without hot wash and wax are suitable for the surface.



### Note

*The use of Two-Part MS Matte Clear Coat - L2K 769 020 A2- should be limited to small surfaces (passenger vehicle attachments).*

## Application Instructions

### Base surface

Suitable preliminary coatings:

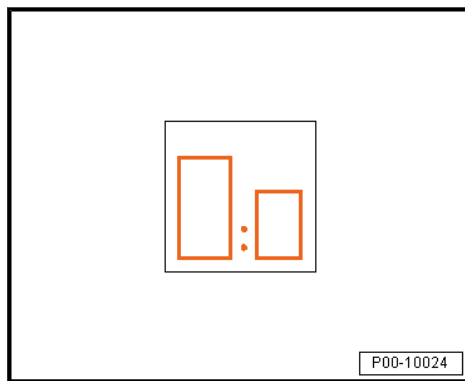
- ◆ Water-based base paints



## Processing

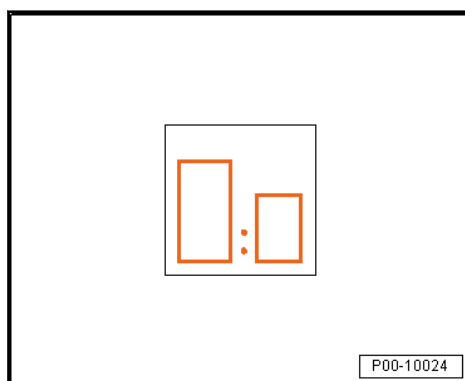
Mixture ratio:

- 3:1 by volume with:
  - ◆ Two-Part HS Hardener - LHA 009 041 A3-
  - ◆ Two-Part HS Hardener, Long - LHA 009 047 A3-
  - ◆ Two-Part HS Hardener, Extra Long - LHA 009 048 A3-



Mixture ratio:

- 5:1 by volume with:
  - ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5-
  - ◆ Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3-
  - ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-



### Note

- ◆ *Using varying HS/VHS hardeners and thinners results in different gloss grades.*
- ◆ *The clear coat should be carefully agitated before removing the material.*

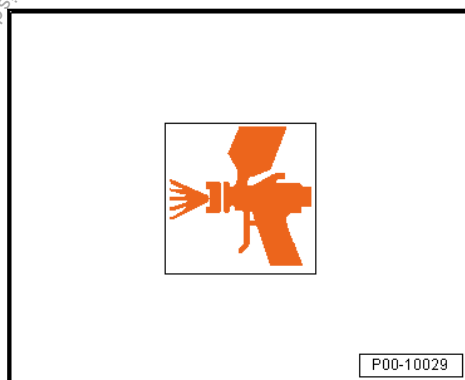
Thinner:

- ◆ Two-Part Thinner - LVE 009 001 A5-
- ◆ Two-Part Thinner, Long - LVM 009 300 A2-
- ◆ Two-Part Thinner, Special - LVM 009 200 A2- / -LVM 009 200 A5-



Working time/pot life:

- Ready to spray in 4 hours at +20 °C (68 °F).





## Application type "coat"

- Processing viscosity at +20 °C (68 °F) material temperature is the mixing viscosity for "Compliant" and "HVLP".

Working viscosity 4 mm gravity feed spray gun "Compliant" and "HVLP":

DIN 4 mm: 14 to 16 seconds

ISO 4 mm: 28 to 33 seconds.

Add 25 % HS hardener (3:1) and 30 % VHS hardener (5:1) at +20 °C (68 °F) material temperature

- Use a measuring stick to mix when pouring in the thinner.

- Set spray nozzle (see manufacturer's information): "Compliant" and "HVLP" to 1.3 to 1.4 mm.
- Set the spray pressure (see manufacturer's information): "Compliant" to 2.0 to 2.5 bar (29.01 to 36.26 psi).
- Set the atomizing pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).
- Apply two coats.



P00-10032



P00-10036



P00-10023



P00-10029



- Apply one complete preliminary spray application, allow to ventilate for 15 to 20 minutes and then finish painting.
- The prescribed layer thickness is 50 to 60 µm.



#### Note

*Using varying application types results in different gloss grades.*



P00-10032

#### Drying

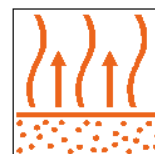
Air dry at +20 °C (68 °F) room temperature:

- ◆ Dust dry after 2 to 2.5 hours
- ◆ Ready for assembly after 5 to 6 hours
- ◆ Dry overnight



P00-10027

Final flash-off time with forced drying is a minimum of 15 to 20 minutes



P00-10026

Forced dry at +60 °C (140 °F) object temperature for 40 to 45 minutes



P00-10027





#### Personal Protective Equipment:

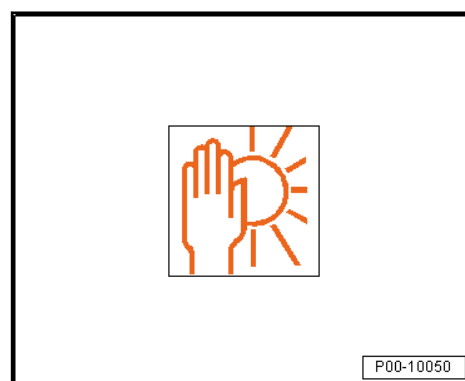
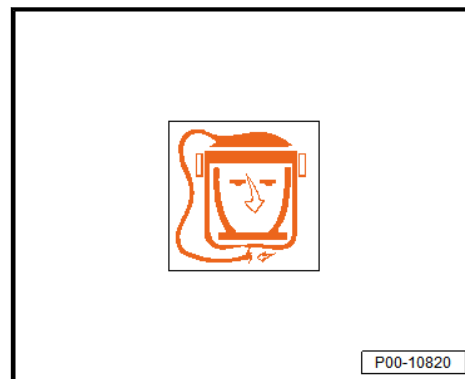
- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

#### Characteristics

Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/IIB (e) (840) 580	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 840 g (29.6 oz)/L volatile organic compounds. The VOC value of this product in ready-to-use form is a maximum of 580 g (20.5 oz)/L.

#### Storage

The guaranteed shelf life of Two-Part MS Matte Clear Coat - L2K 769 020 A2- is 24 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



### 3.8.3 Two-Component Clear Coat, Matte and Satin Finish

#### Definition:

- ◆ Two-Component Clear Coat, Matte - LZK 630 165 A2 2K -
- ◆ Two-Component Clear Coat, Satin Finish - LZK 630 103 A2 2K-

#### Product Description

The new two-component matte clear coats are two clear coats that can be mixed with each other.

#### Characteristics:

- ◆ They can be combined to create the largest range of gloss grades to achieve OEM factory paint structures of 5 GE\* (matte) – 65 GE\* (satin finish) (\*60° angle).
- ◆ New matte pigment technology with significantly smaller pigment size = 4 µm (current/old= 14 µm).
- ◆ Improved color and clarity of effect pigmentation.
- ◆ Easy to use and good reproducibility between the coats.
- ◆ Simple, robust and user-friendly application process.
- ◆ Flexible and easy to use in any climatic condition and for any type of repair, whether individual parts, several components, or full surface painting.
- ◆ Achieves optimal adaptation
- ◆ Defined drying and flash-off times result in a homogeneous and uniform appearance without visible spottiness, even with very low gloss grades.
- ◆ Greatly improved haptics, very smooth surface characteristics when dry



- ◆ Energy savings – thanks to significantly shortened drying times compared to the existing solution.
- ◆ User-friendly and quick color match for matte colors with the WizardWeb advanced digital color management software.
- ◆ Improved coloristic functions – with the introduction of two-component clear coat satin-finish/matte, it is also possible to search for colors by matte colors using the Color Finder.
- ◆ Easy to stir by hand.
- ◆ No special additive necessary for plastic parts.



#### Note

*The use of Two-Part MS Matte Clear Coat - L2K 769 020 A2- should be limited to small surfaces (passenger vehicle attachments).*

#### Application Instructions

##### Suitable base surfaces:

- ◆ A clean vehicle is essential, since a color measurement needs to be performed. It should ideally be performed near the location of the damage.
- ◆ Is undamaged and free of scratches.
- ◆ Is free of surface contamination.
- ◆ Is as close to the location to be repaired as possible.
- ◆ Once you have decided on a location, remove the impurities using Silicone Remover, Long - LVM 020 100- and/or Silicone Remover - LSW 019 000- .
- ◆ Then use a cleaning product that was developed for matte surfaces.
- ◆ In the last step, prepare the surface by performing a final cleaning using the Silicone Remover - LSW 019 000- .

##### Processing:

Mix the selected gloss grade (LZK 630 165/103) with the corresponding hardener as is recommended in the technical application information and in the WizardWeb informational text.

- ◆ In order to allow for a simpler color search when searching for matte colors, it is now also possible to measure colors on matte surfaces.
- ◆ The introduction of the advanced multiple correction in WizardWeb has changed the screen for the color search using the Color Finder.
- ◆ A gloss/matte button was added, which allows you to specifically filter the color search for matte colors.
- ◆ The gloss grade range is divided into 6 matte level (ML) groups.
- ◆ The suggested matte level (ML) is displayed in the informational text of the individual color formula.
- ◆ The standard mixture ratio for each ML is displayed in the matrix table of the technical application information and the "Ready-to-spray mixture of other products" function of WizardWeb.



- ◆ Use the WizardWeb "Ready-to-spray mixture of other products" function to find all mixtures according to the matte level group and the required gloss grade.
- ◆ Since the base surface (water-based paint or sanded clear coat) influences the final gloss grade, please refer to the matrix of the respective base surface or the base paint quality you have selected in the WizardWeb.
- ◆ When specifying the mixture ratio, the Two-Component Clear Coat, Matte - LZK 630 165 A2- is always displayed first in the mixture.
- ◆ Mix the selected gloss grade (LZK 630 165/103) with the corresponding hardener as is recommended in the technical application information and in the WizardWeb informational text.
- ◆ When applying two-component clear coat satin finish/matte on AquaPremium water-based paint, the whole part must either be applied with AquaPremium water-based paint (color) or touch-up additive for AquaPremium. This process applies to all AquaPremium colors (solid and effect).
- ◆ Touch-up additive for AquaPremium must be used for all blending work.
- ◆ If AquaPremium water-based paint is not applied to the entire base surface, this can lead to visible differences in the gloss grade between the applied location and the old paint.
- ◆ In order to choose the best-suited matte level group, please use the "AquaPremium" matrix or select the type/AquaPremium in the WizardWeb product mix.
- ◆ When repairing a vehicle, it is recommended to determine and confirm the correct gloss grade by means of spray-on tests.
- ◆ When in doubt, also create spray-on tests for adjacent gloss grades, which can be found in WizardWeb. Example: 45:55 (standard mixture). Also take 50:50 and 40:60 into consideration.
- ◆ To ensure the quality of spray-on tests, make sure that the application matches the application that will be used on the vehicle.
- ◆ For this reason, attaching the spray-on tests to a sheet metal panel or an old vehicle part during application is recommended.
- ◆ Compare the spray-on tests at the location where you previously performed the measurement.
- ◆ This should be done under daylight conditions if possible.

**Matrix for use with Aquaplast or AquaPremium water-based paint:**

Gloss degree at 60°	ML1 5-10 GE	ML2 11-15 GE	ML3 16-25 GE	ML4 26-35 GE	ML5 36-50 GE	ML6 51-65 GE
LZK 630 165 A2	80*	65*	45*	40*	20*	0*
LZK 630 103 A2	20*	35*	55*	60*	80*	100*
Optional mixture ratios within the respective matte level	100:0	70:30	50:50	45:55	25:75	10:90
	95:5	60:40	40:60	35:65	15:85	5:95



	90:10	55:45		30:70		
	85:15					
	75:25					

2) Default setting of the respective matte level.

- ◆ Values by weight.
  - ◆ It is strongly recommended to always mix using a scale to achieve the greatest level of accuracy of the "ready-to-spray mixture."
- Mix well by hand before adding the hardener and thinner.

#### Mixture ratio:

- ◆ Mixture of Two-Component Clear Coat, Matte - LZK 630 165 A2- with Two-Component Clear Coat, Satin Finish - LZK 769 103 A2- according to the desired matte level (ML1-6).

Addition of hardener by weight:

- ◆ 100 g (3.5 oz) = LZK 630 103/165
- ◆ 26.6 g (0.9 oz) = LHA/LVM 009 051 or LHA 009 053

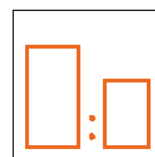
#### Thinner:

Addition of thinner by weight:

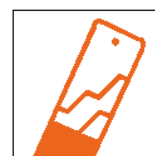
- ◆ 9.1 g (0.3 oz) = LVM 009 300 2K thinner, long



P00-10045



P00-10024



P00-10023



- Stir well by hand before application.



P00-10045

#### Working time/pot life:

Pot life: 75 to 90 minutes at 20 °C (68 °F)



P00-10027

#### Application type "coat"

- ◆ Apply two normal even coats.
- ◆ 15 minutes of intermediate drying time.



P00-10032

- Set spray nozzle (see manufacturer's information): "Compliant" and "HVLP" to 1.3 to 1.4 mm.
- Set spray nozzle (see manufacturer's information): "Compliant" 1.8 to 2.0 bar (26.11 to 29.01 psi).
- Set the atomizing pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).



P00-10029



- Processing viscosity at +20 °C (68 °F) material temperature is the mixing viscosity for “Compliant” and “HVLP”.

Working viscosity 4 mm gravity feed spray gun “Compliant” and “HVLP”:

DIN 4 mm: 14 to 16 seconds

ISO 4 mm: 28 to 33 seconds.

Add 25 % HS hardener (3:1) and 30 % VHS hardener (5:1) at +20 °C (68 °F) material temperature

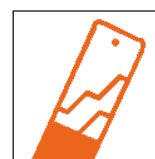
- Use a measuring stick to mix when pouring in the thinner.

- Set spray nozzle (see manufacturer's information): “Compliant” and “HVLP” to 1.3 to 1.4 mm.
- Set the spray pressure (see manufacturer's information): “Compliant” to 2.0 to 2.5 bar (29.01 to 36.26 psi).
- Set the atomizing pressure (see manufacturer's information): “HVLP” 0.7 bar (10.15 psi).

The final flash-off time with forced drying is a minimum of 15 minutes.



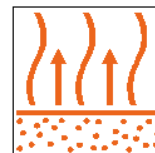
P00-10036



P00-10023



P00-10029



P00-10026



Forced dry at +60 °C (140 °F) object temperature for 25 to 35 minutes

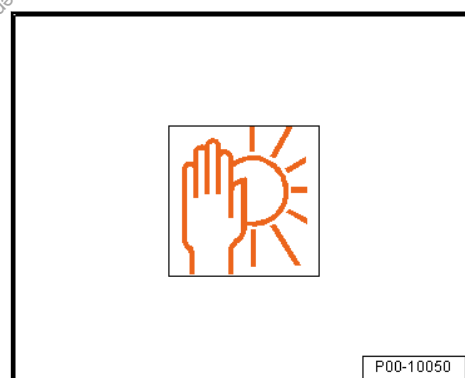
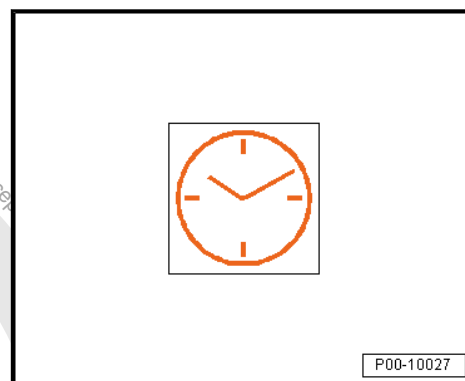
- ◆ A sufficient warm-up phase must be taken into consideration. Air drying overnight is possible, but it can lead to differences in the gloss appearance.
- ◆ Forced drying is the preferred method of drying and leads to the most stable and reliable reproducibility.

#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

#### Storage

The guaranteed shelf life of Two-Part MS Matte Clear Coat - L2K 769 020 A2- is 24 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



### 3.8.4 Two-Part HS Optimum Clear Coat

#### Definition:

- ◆ Two-Part HS Optimum Clear Coat - LZK 769 K02 A5-

Edition 10/2012

#### Product Description

Two-part HS optimum clear coat is a VOC compliant (VOC value less than 420 g (14.8 oz)/L), high-quality and productive high solid clear coat.

#### Characteristics:

- ◆ Easy and economical processing
- ◆ Very good spreading properties
- ◆ Dries very quickly
- ◆ Very good IR drying
- ◆ Quick and easy to polish
- ◆ High-gloss result



## Application Instructions

### Base surface

Suitable preliminary coatings:

- ◆ Water-based base paints

### Processing

Mixture ratio:

- 3:1 by volume with:

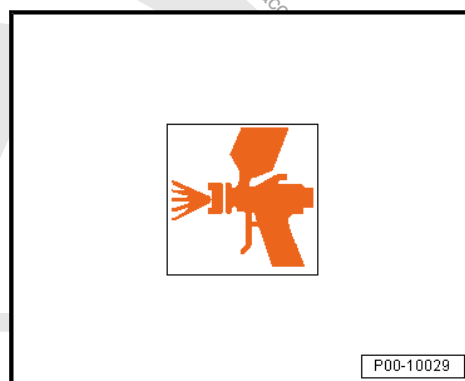
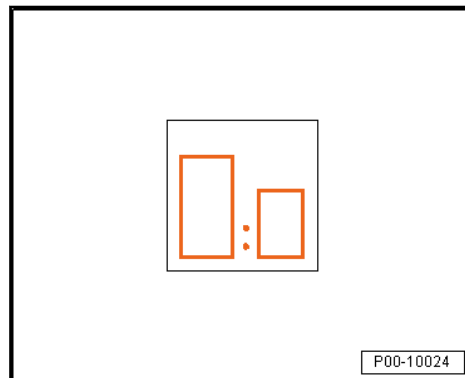
- ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5-
- ◆ Two-Part VHS Hardener, Short - LHA 009 050 A2-
- ◆ Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3-
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-
- ◆ See technical application information for the two-part VHS hardener. Refer to ➔ [“3.9.2 Two-Part VHS Hardener and Two-Part VHS Performance Hardener”, page 258](#).

For elastification. Refer to ➔ [page 227](#) .

Working time/pot life:

- Ready to spray in 80 to 100 minutes at +20 °C (68 °F)

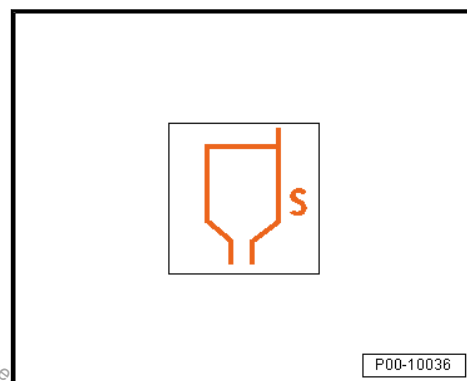
Application type “coat”



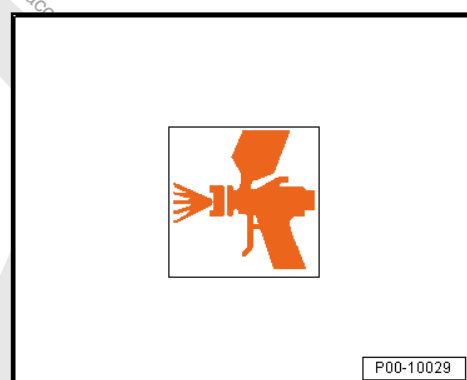




- Processing viscosity at +20 °C (68 °F) material temperature is the mixing viscosity for “Compliant” and “HVLP”.



- Set spray nozzle (see manufacturer's information): “Compliant” 1.2 to 1.3 mm.
- Set the spray nozzle (see manufacturer's information): “HVLP” 1.3 to 1.4 mm.
- Set the spray pressure (see manufacturer's information): “Compliant” to 2.0 to 2.5 bar (29.01 to 36.26 psi).
- Set the atomizing pressure (see manufacturer's information): “HVLP” 0.7 bar (10.15 psi).



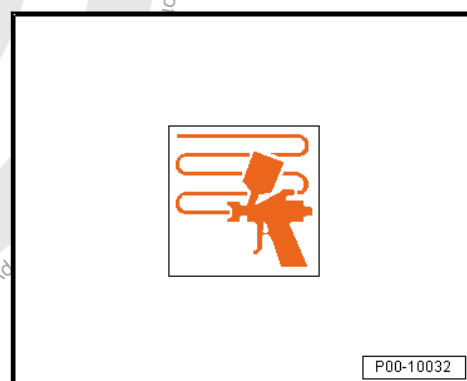
- Apply 1.5 coats.



#### Note

*During the spray application process, the first half spray application should form a thin, nearly complete film upon which a fully-completed spray application can be applied.*

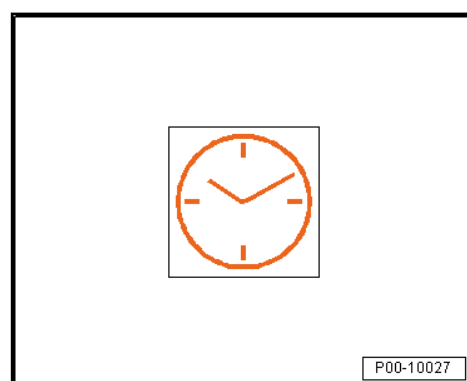
- The recommended dry layer thickness is between 45 and 55 µm.



### Drying

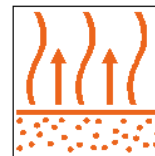
Air dry at +20 °C (68 °F) room temperature:

- ◆ Dust dry after 40 to 50 minutes
- ◆ Ready for assembly after four to six hours
- ◆ Dry overnight





Final flash-off time with forced drying is a minimum of 5 to 10 minutes.



P00-10026

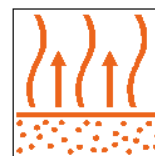
Forced drying at +60 °C (140 °F) object temperature with:

- ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5- for 20 to 25 minutes.
- ◆ Two-Part VHS Hardener, Short - LHA 009 050 A2- for 15 to 20 minutes.
- ◆ Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3- for 20 to 30 minutes.
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2- for 25 to 35 minutes.



P00-10027

Final flash-off time for IR drying is a minimum of 5 to 10 minutes.



P00-10026

IR dry with short-wave heater for 8 to 12 minutes



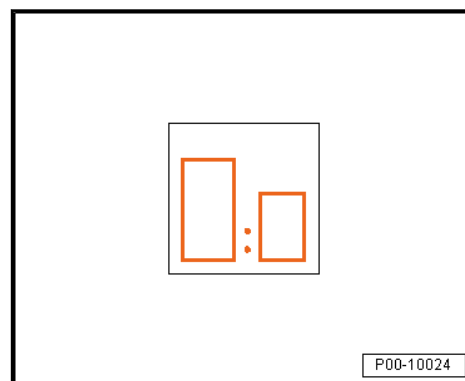
P00-10028



## Special Instructions

Elastification for rigid and semi-rigid plastics:

- ◆ The base material must first be mixed with 15 % Two-Part Elastic Additive - ALZ 011 001- .
- ◆ Mixing two-part VHS hardeners, 3:1 with 5 % thinner (drying extends this).

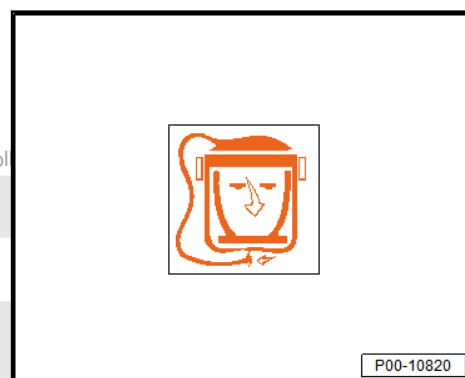


## Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

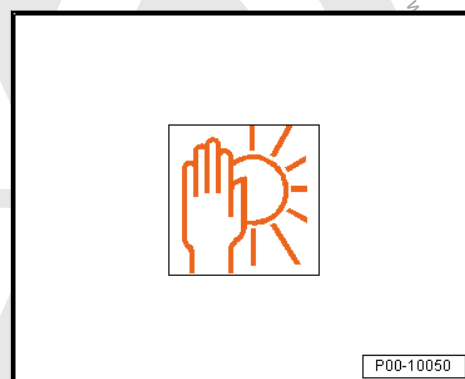
## Characteristics

Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/IIB (d) (420) 420	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 420 g (14.8 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 420 g (14.8 oz)/L.



## Storage

The guaranteed shelf life of Two-Part HS Optimum Clear Coat - LZK 769 K02 A5- is 48 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



## 3.8.5 Two-Part HS Optimum Plus Clear Coat

### Definition:

- ◆ Two-Part HS Optimum Plus Clear Coat - LZK 769 K07 A5-

Edition 04/2013

### Product Description

The two-part HS optimum plus clear coat is a VOC compliant high solid clear coat. Optimal application even under unfavorable booth conditions, for example low drying temperature.

### Characteristics:

- ◆ Flexible and efficient application possible
- ◆ Dries very quickly
- ◆ Quick and easy to polish
- ◆ It is possible to use HS Spot Thinner - LVM 006 000 A2-



## Application Instructions

### Base surface

Suitable preliminary coatings:

- ◆ Water-based base paints

### Processing

Mixture ratio:

- 3:1 by volume with:

- ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5-
- ◆ Two-Part VHS Hardener, Short - LHA 009 050 A2-
- ◆ Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3-
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-
- ◆ See technical application information for the two-part VHS hardener. Refer to ➤ [“3.9.2 Two-Part VHS Hardener and Two-Part VHS Performance Hardener”, page 258](#) .

Thinner:

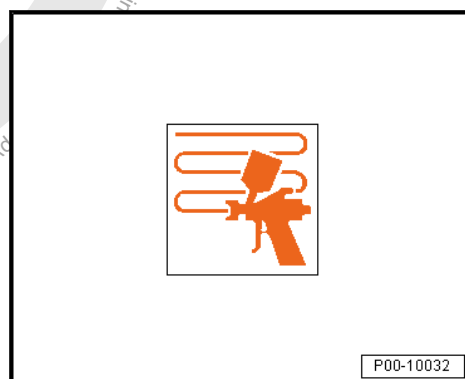
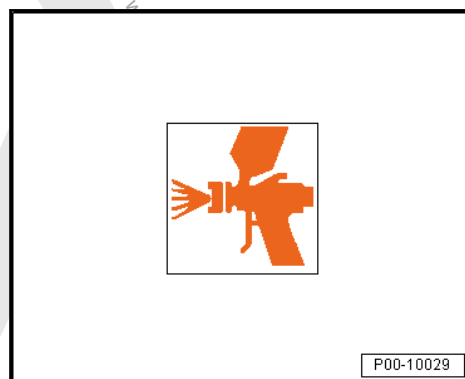
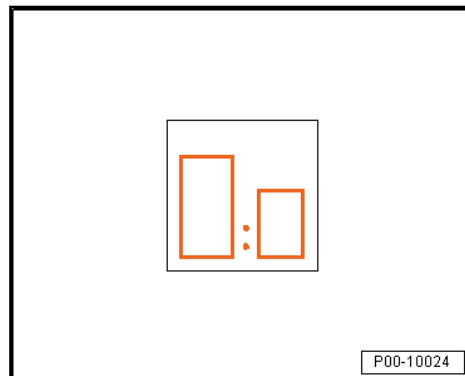
- ◆ Two-Part Thinner, Special - LVM 009 200 A2- / -LVM 009 200 A5-
- ◆ Two-Part Thinner, Long - LVM 009 300 A2-
- ◆ HS Spot Thinner - LVM 006 000 A2-
- ◆ See the technical application information on the LVM 006 000 A2 HS spot thinner. Refer to ➤ [“3.10.2 HS Spot Thinner”, page 266](#) .

For elastification. Refer to ➤ [page 231](#) .

Working time/pot life:

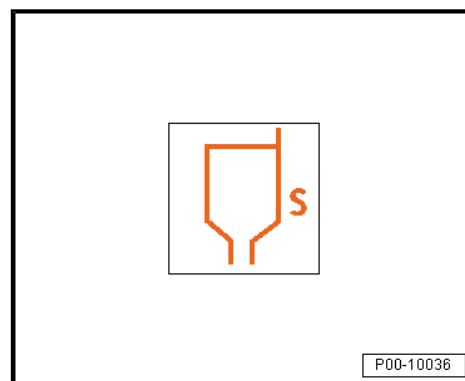
- Ready to spray in 45 to 60 minutes at +20 °C (68 °F) (depending on the hardener used)

Application type “coat”

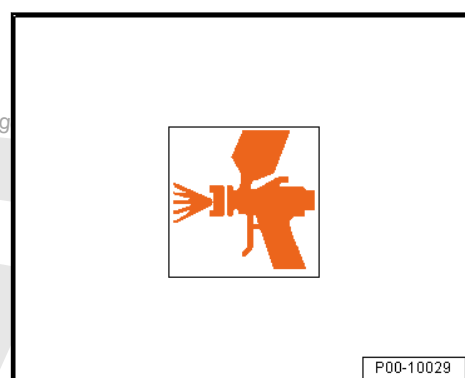




- Processing viscosity at +20 °C (68 °F) material temperature is the mixing viscosity for “Compliant” and “HVLP”.



- Set spray nozzle (see manufacturer's information): “Compliant” 1.2 to 1.3 mm.
- Set the spray nozzle (see manufacturer's information): “HVLP” 1.3 to 1.4 mm.
- Set the spray pressure (see manufacturer's information): “Compliant” to 2.0 to 2.5 bar (29.01 to 36.26 psi).
- Set the atomizing pressure (see manufacturer's information): “HVLP” 0.7 bar (10.15 psi).



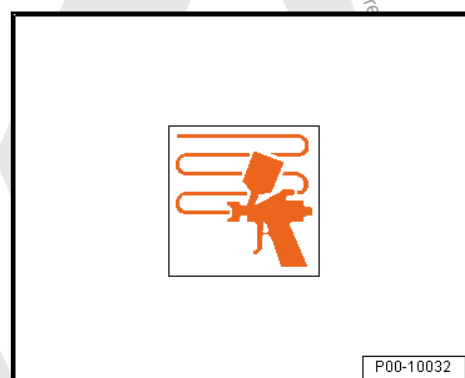
- Apply 1.5 coats.



#### Note

*During the spray application process, the first half spray application should form a thin, nearly complete film upon which a fully-completed spray application can be applied.*

- The recommended dry layer thickness is between 40 and 60 µm.



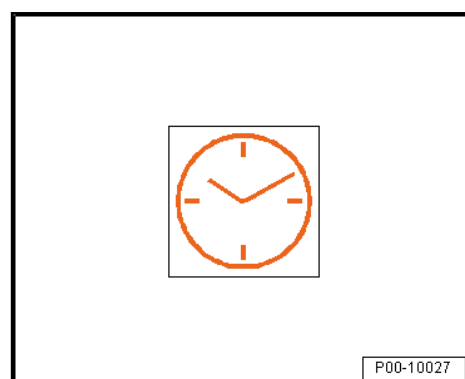
#### Note

*When using as a clear coat for minimal damage repairs (clever repair procedure), 10 % Two-Part Thinner, Special - LVM 0009 200 A2- and Two-Part Thinner, Special - LVM 009 200 A5- can be replaced with 10 % HS Spot Thinner - LVM 006 000 A2 HS- . Do not apply on slanted surfaces.*

### Drying

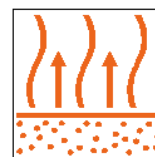
Air dry at +20 °C (68 °F) room temperature:

- ◆ Dust dry after 15 to 30 minutes
- ◆ Ready for assembly after two to five hours
- ◆ Dry overnight





Final flash-off time with forced drying is five minutes.



P00-10026

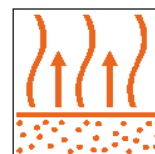
Forced drying at +60 °C (140 °F) object temperature with:

- ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5- for 15 to 25 minutes.
- ◆ Two-Part VHS Hardener, Short - LHA 009 050 A2- for 10 to 15 minutes.
- ◆ Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3- for 20 to 30 minutes.
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2- for 25 to 35 minutes.



P00-10027

Final flash-off time for IR drying is five minutes.



P00-10026

IR dry with short-wave heater for 8 to 12 minutes



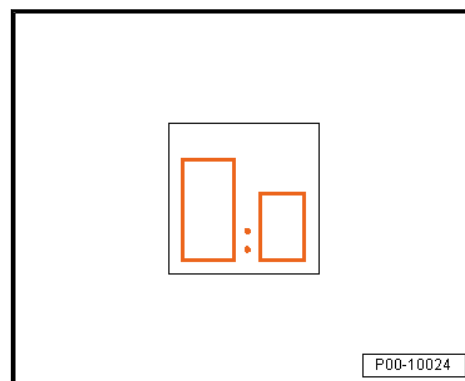
P00-10028



## Special Instructions

Elastification for rigid and semi-rigid plastics:

- ◆ The base material must first be mixed with 15 % Two-Part Elastic Additive - ALZ 011 001- .
- ◆ Mixture with two-part VHS hardeners, 3:1 with 10 % Two-Part Thinner, Special - LVM 009 200 A2- or Two-Part Thinner, Special - LVM 009 200 A5- (drying period is lengthened).



## Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

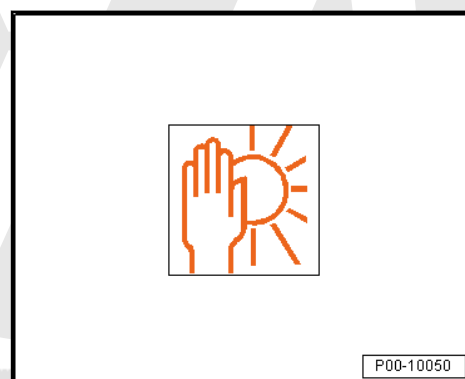
## Characteristics

Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/IIB (d) (420) 420	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 420 g (14.8 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 420 g (14.8 oz)/L.



## Storage

The guaranteed shelf life of Two-Part HS Optimum Plus Clear Coat - LZK 769 K07 A5- is 48 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



## 3.8.6 Two-Part Brilliant Clear Coat

### Definition:

- ◆ Two-Part HS Brilliant Clear Coat - L2K 769 K04 A5-

Edition 10/2010

### Product Description

Two-part HS brilliant clear coat is a high-gloss, VOC compliant high solid clear coat from the two-part acrylic system.

### Characteristics:

- ◆ Very high stability under load
- ◆ Reliable application
- ◆ Very good gloss and depth
- ◆ Can be used in a number of ways by adding thinner
- ◆ Processing in two spray applications



## Application Instructions

### Base surface

Suitable preliminary coatings:

- ◆ Water-based base paints

### Processing

Mixture ratio:

- 3:1 by volume with:

- ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5-
- ◆ Two-Part VHS Hardener, Short - LHA 009 050 A2-
- ◆ Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3-
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-
- ◆ The choice of hardener depends on the temperature and the size of the surface. See technical application information two-part VHS hardener. Refer to ⇒ [“3.9.2 Two-Part VHS Hardener and Two-Part VHS Performance Hardener”, page 258](#).

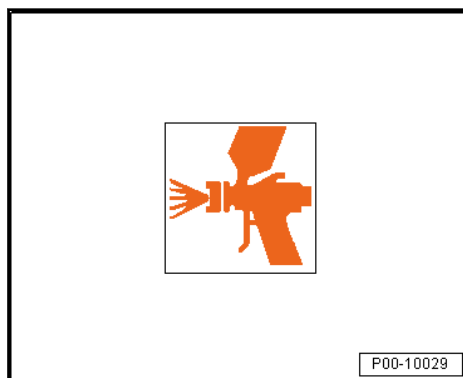
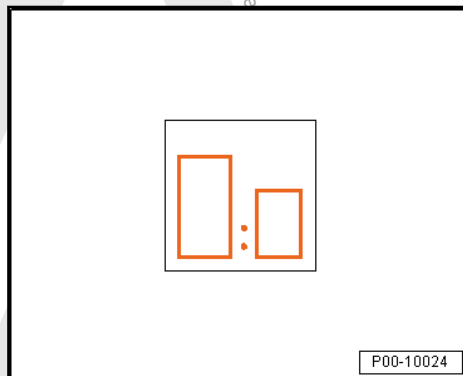
For elastification. Refer to ⇒ [page 235](#).

Dilutable with:

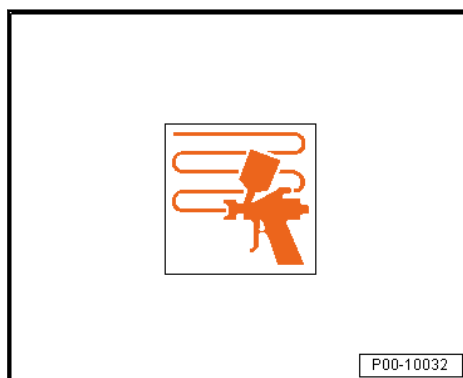
- ◆ Two-Part Thinner, Special - LVM 009 200 A2/A5-

Working time/pot life:

- Ready for spraying 60-75 minutes at +20 °C (68 °F).



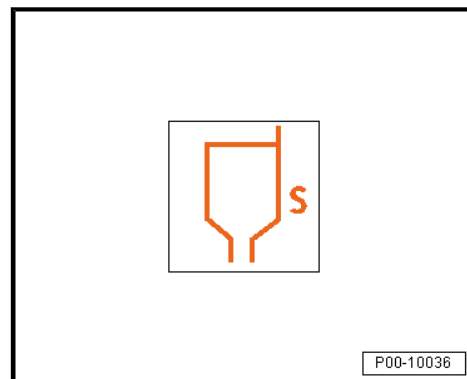
Application type “coat”







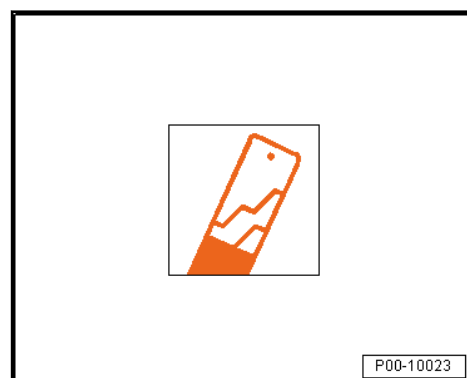
- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211



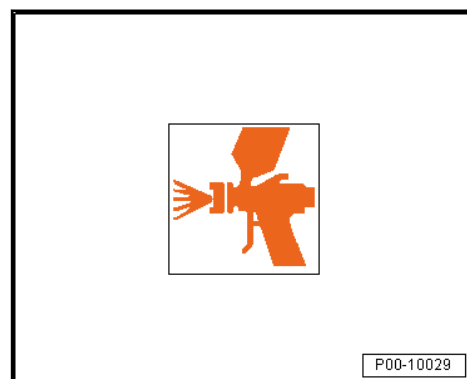
Adding 10 % thinner at +20 °C (68 °F) material temperature.

- Use a measuring stick to mix when pouring in the thinner.

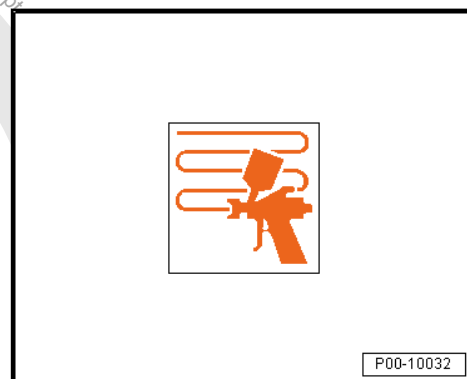
Working viscosity 4 mm gravity feed spray gun “Compliant” and “HVLP”:



DIN 4 mm: 18 to 21 seconds



- Set spray nozzle (see manufacturer's information): “Compliant” 1.2 to 1.3 mm.
- Set spray nozzle (see manufacturer's information): “HVLP” 1.2 to 1.3 mm.
- Set the spray pressure (see manufacturer's information): “Compliant” to 2.0 to 2.5 bar (29.01 to 36.26 psi).
- Set the atomizing pressure (see manufacturer's information): “HVLP” 0.7 bar (10.15 psi).
- Apply in two spray applications with a 5 to 10 minute intermediate flash-off time. The first spray application is applied lightly, but completely.
- The recommended dry layer thickness is between 50 and 70 µm.





## Drying

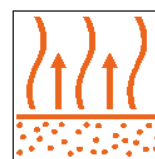
Final flash-off time with forced drying is at least 10 minutes.

Forced drying is at between +60 and 65 °C (140 and 149 °F) for 35 to 40 minutes.

Final flash-off time for IR drying is a minimum of 5 to 10 minutes.



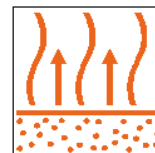
P00-10027



P00-10026



P00-10027



P00-10026



IR dry with a short-wave heater for 15 to 20 minutes and with a medium-wave heater for 10 to 15 minutes

### Special Instructions

Elastification for rigid and semi-rigid plastics:

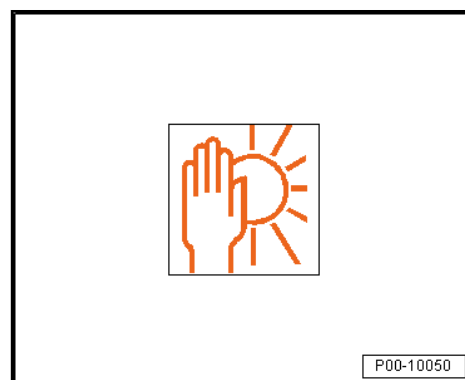
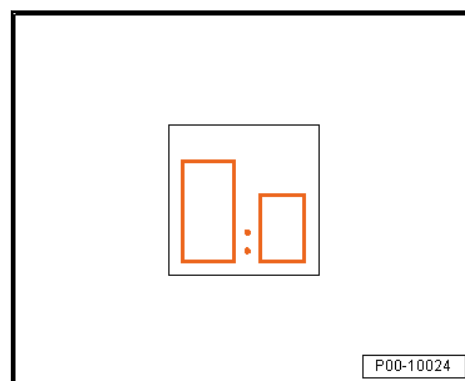
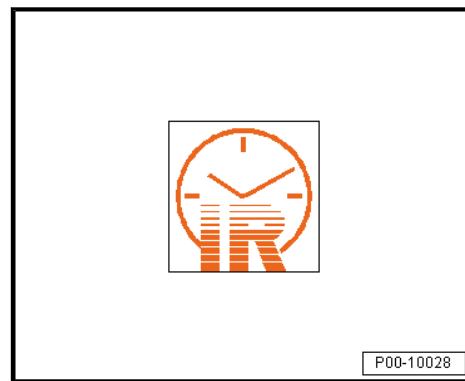
- ◆ The base material must first be mixed with 15 % Two-Part Elastic Additive - ALZ 011 001- .
- ◆ Mixture with two-part VHS hardeners 3:1 with 10 % Two-Part Thinner, Special - LVM 009 200 A2/A5- (drying period is lengthened).

### Characteristics

Delivery Viscosity	DIN 4 mm, +20 °C: 24 to 28 seconds
Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/IIB (d) (420) 420	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 420 g (14.8 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 420 g (14.8 oz)/L.

### Storage

The guaranteed shelf life of Two-Part HS Brilliant Clear Coat - L2K 769 K04 A5- is 48 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



## 3.8.7 Two-Part HS Brilliant Plus Clear Coat

### Definition:

- ◆ Two-Part HS Brilliant Plus Clear Coat - LZK 769 K05 A5-

Edition 01/2017

### Product Description

Two-part HS brilliant clear coat is a high-gloss, VOC compliant high solid clear coat from the two-part acrylic system.

Characteristics:

- ◆ Can be used in a number of ways
- ◆ High stability



- ◆ Polishes very well
- ◆ Good spreading properties
- ◆ Good gloss and depth.
- ◆ Processing in two spray applications (preferred), (1.5 spray applications possible)

### Application Instructions

#### Base surface

Suitable preliminary coatings:

- ◆ Water-based base paints

#### Processing

Mixture ratio:

- 3:1 by volume with:
- ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5-
- ◆ Two-Part VHS Hardener, Short - LHA 009 050 A2-
- ◆ Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3-
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-
- ◆ The choice of hardener depends on the temperature and the size of the surface. See technical application information two-part VHS hardener. Refer to ➤ [“3.9.2 Two-Part VHS Hardener and Two-Part VHS Performance Hardener”, page 258](#) .

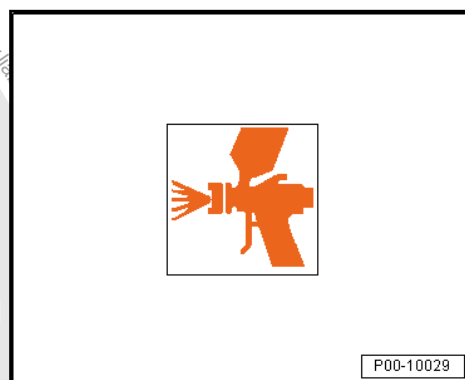
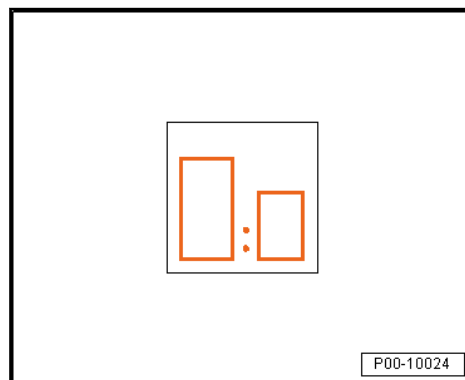
For elastification. Refer to ➤ [page 239](#) .

Dilutable with:

- ◆ Clear Coat Additive - LVM 007 000 A2-
- ◆ HS Spot Thinner - LVM 006 000 A2-
- ◆ See the HS spot thinner technical application information. Refer to ➤ [“3.10.2 HS Spot Thinner”, page 266](#) .

Working time/pot life:

- Ready to spray in 75 to 90 minutes at +20 °C (68 °F)





Application type "coat"

- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211

Working viscosity 4 mm gravity feed spray gun "Compliant" and "HVLP" is the mixed viscosity.

Adding 5 % Clear Coat Additive - LVM 007 000 A2- at +20 °C (68 °F) material temperature



#### Note

- ◆ *When using as a clear coat for minimal damage repairs (clever repair procedure), 5 % Clear Coat Additive - LVM 007 000 A2- can be replaced with 5 % HS Spot Thinner - LVM 006 000 A2- .*
- ◆ *The mixture for the clever repair procedure described above should not be used on reclined surfaces.*
- Use a measuring stick to mix when pouring in the thinner.



P00-10032



P00-10036



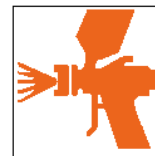
P00-10029



P00-10023



- Set the spray nozzle (see manufacturer's information):  
"Compliant" 1.3 to 1.4 mm.
- Set the spray nozzle (see manufacturer's information):  
"HVLP" 1.3 to 1.4 mm.
- Set spray nozzle (see manufacturer's information): "Compliant" 1.8 to 2.2 bar (26.11 to 31.91 psi).
- Set the atomization pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).



P00-10029

- Can be applied in two spray applications with a 5 to 10 minute intermediate flash-off time. The first spray application is applied lightly, but completely.

- Apply 1.5 spray applications. The first half spray application should form a thin, nearly complete film upon which a fully-completed spray application can be applied.

The recommended dry layer thickness is between 50 and 70 µm.



P00-10032

### Drying

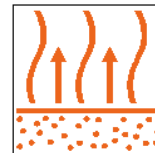
Air dry at between +18 and 22 °C (64.4 and 71.6 °F) room temperature.

- ◆ Dry overnight.



P00-10027

Final flash-off time with forced drying is a minimum of 5 to 10 minutes.



P00-10026



Forced drying is at between +60 and 65 °C (140 and 149 °F) for 30 to 35 minutes.

Final flash-off time for IR drying is a minimum of 5 to 10 minutes.

IR drying short-wave radiators:

- ◆ 5 minutes (at 50 % output)
- ◆ 10 - 15 minutes (at 100 % output)

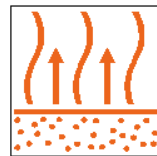
### Special Instructions

Elastification for rigid and semi-rigid plastics:

- ◆ The base material must first be mixed with 15 % Two-Part Elastic Additive - ALZ 011 001- .
- ◆ Mixture with two-part VHS hardeners, 3:1 with 5 % Clear Coat Additive - LVM 007 000 A2- (drying period is lengthened).



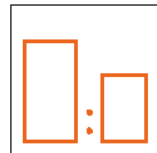
P00-10027



P00-10026



P00-10028



P00-10024



### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

### Characteristics

Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/IIB (d) (420) 420	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 420 g (14.8 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 420 g (14.8 oz)/L.

### Storage

The guaranteed shelf life is:

- ◆ 48 months from date of manufacture for Two-Part HS Brilliant Plus Clear Coat - LZK 769 K05 A5- .
- ◆ 24 months from date of manufacture for Clear Coat Additive - LVM 007 000 A2- .

Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



P00-10820



P00-10050

## 3.8.8 Two-Part HS Performance Clear Coat

### Definition:

- ◆ Two-Part HS Performance Clear Coat - LZK 769 K06 A5-

Edition 08/2012

### Product Description

The two-part HS performance clear coat is a high-gloss, VOC compliant high solid clear coat.

### Characteristics:

- ◆ Can be used in a number of ways for all areas of repair
- ◆ Flexible application in 1.5 spray applications (preferred), or possible in two spray applications
- ◆ Good stability
- ◆ Good gloss and depth.
- ◆ Dries quickly

### Application Instructions

#### Base surface

Suitable preliminary coatings:

- ◆ Water-based base paints







## Processing

Mixture ratio:

– 3:1 by volume with:

- ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5-
- ◆ Two-Part VHS Hardener, Short - LHA 009 050 A2-
- ◆ Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3-
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-
- ◆ The choice of hardener depends on the temperature and the size of the surface. See technical application information two-part VHS hardener. Refer to ➤ [“3.9.2 Two-Part VHS Hardener and Two-Part VHS Performance Hardener”](#), page 258 .

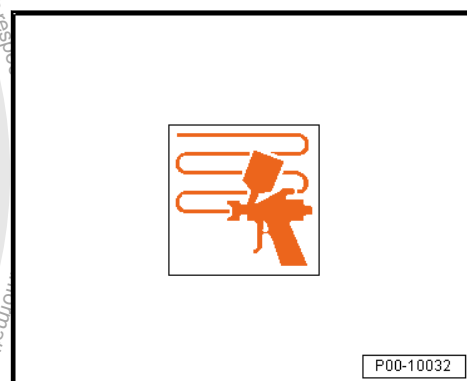
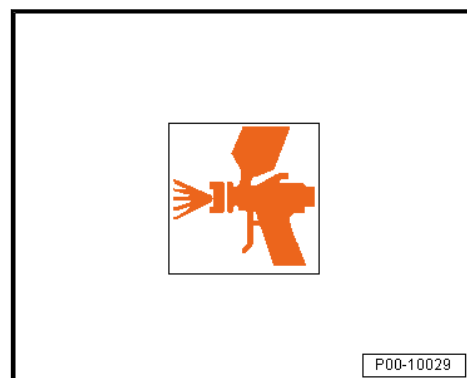
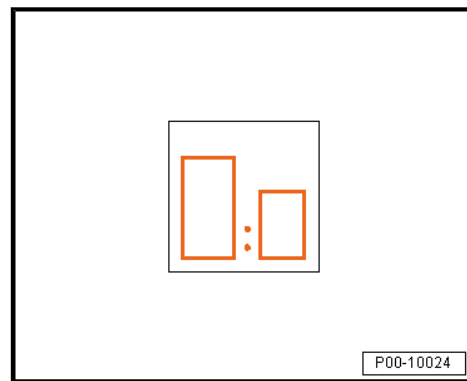
For elastification. Refer to ➤ [page 244](#) .

Dilutable with:

- ◆ Clear Coat Additive - LVM 007 000 A2-
- ◆ HS Spot Thinner - LVM 006 000 A2-
- ◆ See the HS spot thinner technical application information. Refer to ➤ [“3.10.2 HS Spot Thinner”](#), page 266 .

Working time/pot life:

– Ready to spray in 60 to 120 minutes at +20 °C (68 °F)



Application type “coat”



- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211

Working viscosity 4 mm gravity feed spray gun “Compliant” and “HVLP” is the mixed viscosity.

Adding 5 % Clear Coat Additive - LVM 007 000 A2- at +20 °C (68 °F) material temperature



#### Note

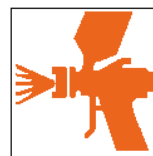
- ◆ *When using as a clear coat for minimal damage repairs (clever repair procedure), 5 % Clear Coat Additive - LVM 007 000 A2- can be replaced with 5 % HS Spot Thinner - LVM 006 000 A2-.*
- ◆ *The mixture for the clever repair procedure described above should not be used on reclined surfaces.*
- Use a measuring stick to mix when pouring in the thinner.
- Set the spray nozzle (see manufacturer's information): “Compliant” 1.3 to 1.4 mm.
- Set the spray nozzle (see manufacturer's information): “HVLP” 1.3 to 1.4 mm.
- Set the spray pressure (see manufacturer's information): “Compliant” to 2.0 to 2.5 bar (29.01 to 36.26 psi).
- Set the atomizing pressure (see manufacturer's information): “HVLP” 0.7 bar (10.15 psi).
- Apply 1.5 spray applications. The first half spray application should form a thin, nearly complete film upon which a fully-completed spray application can be applied.
- Can be applied in two spray applications with a 5 to 10 minute intermediate flash-off time. The first spray application is applied lightly, but completely.
- The recommended dry layer thickness is between 50 and 70 µm.



P00-10036



P00-10023



P00-10029



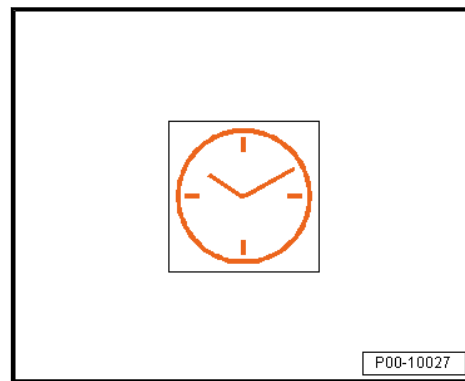
P00-10032



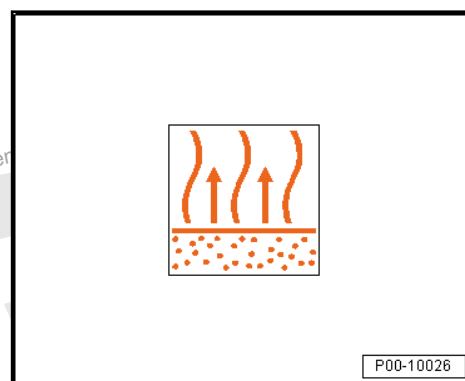
## Drying

Air dry at between +18 and 22 °C (64.4 and 71.6 °F) room temperature:

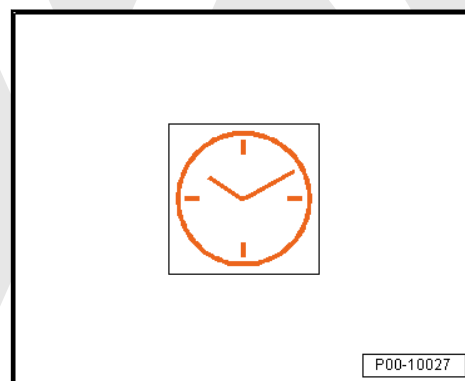
- ◆ Dry overnight



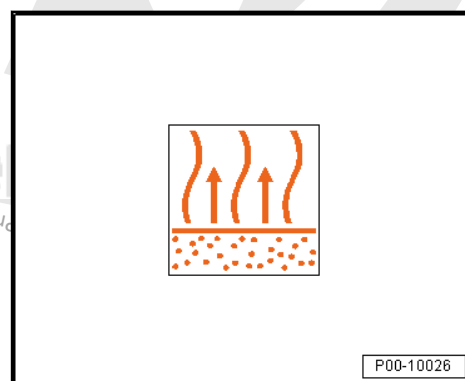
Final flash-off time with forced drying is a minimum of 5 to 10 minutes.



Forced drying is at between +60 and 65 °C (140 and 149 °F) for 25 to 35 minutes.



Final flash-off time for IR drying is a minimum of 5 to 10 minutes.





IR dry with short-wave heater for 10 to 15 minutes

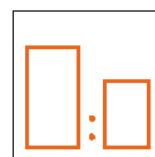


P00-10028

### Special Instructions

Elastification for rigid and semi-rigid plastics:

- ◆ The base material must first be mixed with 15 % Two-Part Elastic Additive - ALZ 011 001- .
- ◆ Mixture with two-part VHS hardeners, 3:1 with 5 % Clear Coat Additive - LVM 007 000 A2- (drying period is lengthened).



P00-10024

### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

### Characteristics

Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/IIIB (d) (420) 420	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 420 g (14.8 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 420 g (14.8 oz)/L.



P00-10820

### Storage

The guaranteed shelf life is:

- ◆ 48 months from date of manufacture for Two-Part HS Brilliant Plus Clear Coat - LZK 769 K05 A5- .
- ◆ 24 months from date of manufacture for Clear Coat Additive - LVM 007 000 A2- .

Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



P00-10050

## 3.8.9 Two-Component HS Race Clear Coat

### Definition:

- ◆ Two-Component HS Race Clear Coat - LZK 769 K08 A5-



## Product Description

- ◆ Two-component HS race clear coat LZK 769 K08 A5 is an easy-to-use, fast-drying and energy-saving clear coat for excellent results.
- ◆ Two-component race clear coat is a versatile clear coat.
- ◆ Its simple workability with excellent spreading properties as well as its fast flexible drying reduces throughput times. Moreover, the high gloss ensures good coating results.

### Characteristics:

- ◆ Suitable for all repairs, from minor damage to full surface painting.
- ◆ User-friendly usage in two spray applications with short drying time in between applications.
- ◆ Very good stability under load.
- ◆ Good paint finish thanks to the smooth flow and high gloss.
- ◆ Fast drying: 15 minutes at +60 °C (140 °F).
- ◆ Energy-saving drying: 30 minutes at +40 °C (104 °F).
- ◆ IR drying possible.

## Application Instructions

### Products:

- ◆ Two-component HS race clear coat LZK 769 K08 A5
- ◆ Two-component VHS race hardener LVM 009 008 A3
- ◆ Race additive LVM 006 008 A2
- ◆ Race blender LVM 013 008 A2

### Application instructions:

- ◆ Two-component HS race clear coat LZK 769 K08 A5 was developed for productive drying at +40 °C and 60 °C (104 °F and 140 °F).
- ◆ Touch-up paintwork requires the use of a special touch-up thinner with race blender.
- ◆ Two-component HS race clear coat should be at a room temperature of +18 to 25 °C (64.4 to 77 °F) before use.
- ◆ Do not pour excess, ready-to-use two-component HS race clear coat back into the original container.
- ◆ Securely seal the original container immediately after use.
- ◆ Two-component HS race clear coat reacts with humidity and water, losing its ability to dry through.
- ◆ Producing a matte finish with two-component HS race clear coat is not possible.
- ◆ It is not necessary to add a two-component elastic additive ALZ 011 001 for plastic and flexible base surfaces.
- ◆ Preparation with an elasticized filler is necessary. See the data sheet for the respective filler.
- ◆ Note the additional heating time up to the object temperature.

### Base surfaces:

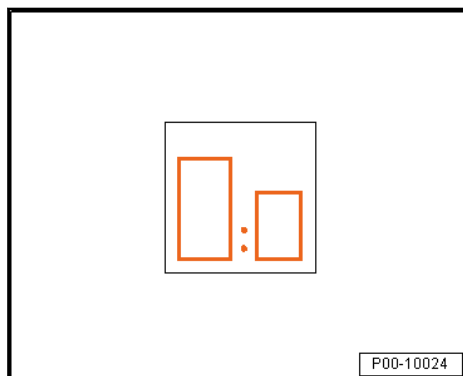
- ◆ Existing paint: the surface must be sanded before application.



- ◆ Clean base surfaces with suitable cleaning solution so that all contamination or residue is removed.

### Processing

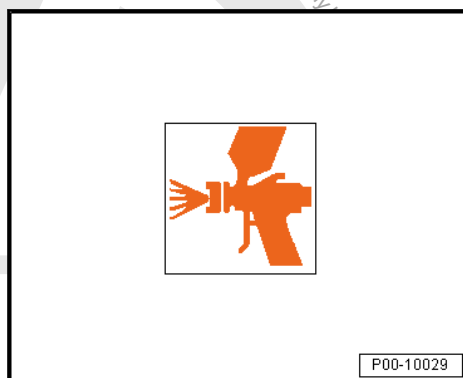
Mixture ratio: mixture ratios with special additives can be found in the product mix table on WizardWeb and in the respective data sheet.



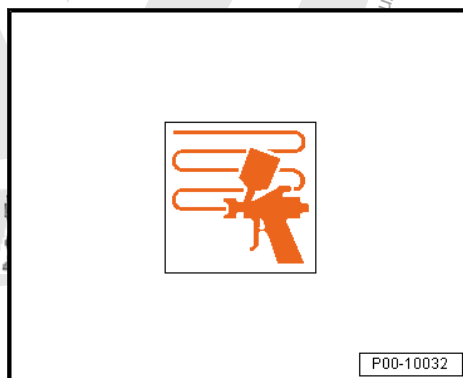
Two-component HS race clear coat LZK 769 K08 A5		Two-component VHS race hardener LVM 009 008 A3		Thinner LVM 006 008	
Volume	Weight	Volume	Weight	Volume	Weight
2	100	1	52	10%	13

Working time/pot life:

- Ready to spray in 90 to 120 minutes at +20 °C (68 °F).



Application type "coat"





Working viscosity 4 mm gravity feed spray gun DIN 4: 14 to 16 sec. at 20 °C (68 °F).

- Use a measuring stick to mix when pouring in the thinner.



P00-10036

- Set the spray nozzle (see manufacturer's information): "Compliant" 1.3 to 1.4 mm.
- Set spray nozzle (see manufacturer's information): "HVLP" 1.2 to 1.3 mm.
- Set spray nozzle (see manufacturer's information): "Compliant 1.2 to 1.3" 1.8 to 2.0 bar (26.11 to 29.01 psi).
- Set the atomizing pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).



P00-10029

- Can be applied in two spray applications.
- Can be applied in two spray applications with a two to five minute intermediate flash-off time.
- The recommended dry layer thickness is between 40 and 60 µm.



P00-10032

## Drying



P00-10027

Temperature	Two-component VHS race hardener LVM 009 008 A3
18 to 22 °C (64.4 to 71.6 °F)	12 hours to 16 hours
40 to 45 °C (104 to 113 °F)	30 min. to 35 min.
60 to 65 °C (140 to 149 °F)	15 min. to 20 min.



Final flash-off time for IR drying is at least five minutes.

IR drying short-wave radiators, half-output for two minutes, full output for eight minutes.

#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

#### Characteristics

Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/II B (d) (420) 420	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 420 g (14.8 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 420 g (14.8 oz)/L.

#### Storage

The guaranteed shelf life is:

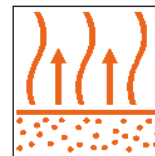
- ◆ 48 months from production date.

Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).

### 3.8.10 Blender

#### Definition:

- ◆ Blender - LVE 013 100 A2-



P00-10026



P00-10028



P00-10820



P00-10050





Edition 10/2012

## Product Description

Blender was developed for hassle-free two-part clear coat and two-part top coat touch-up.

Characteristics:

- ◆ Easy to use (pure)
- ◆ Applies well to all base surfaces
- ◆ Blends well with the old paint

## Application Instructions

### Preparation

Applying base paint:

- ◆ Keep the filler surface as small as possible.
- ◆ Paint filler spot thoroughly with water-based base paint (overlapping spray applications)

### Touch-up system for two-part clear coats

Mixing ratio for two-part clear coat:

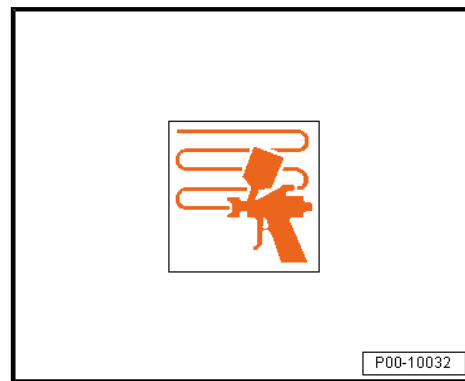
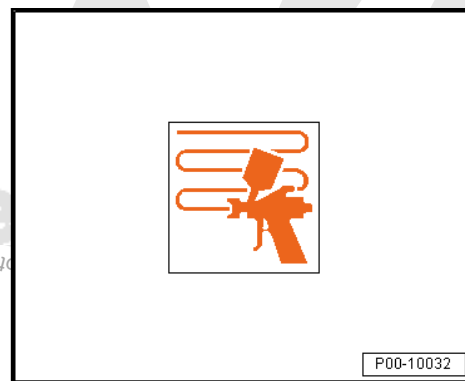
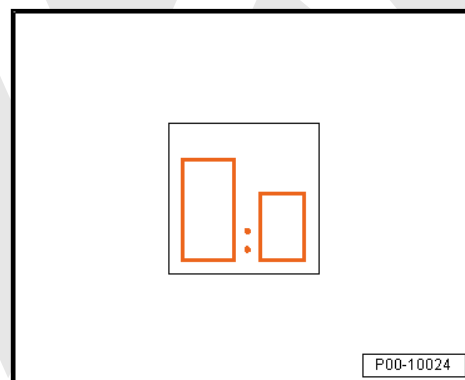
- Adjust the two-part clear coat according to technical application information. Refer to [⇒ "3.8 Clear Coats", page 207](#) .

Painting:

- Paint over the water-based base paint with adjusted clear coat (overlapping spray applications).

Touch-up process:

- Apply pure Blender - LVE 013 100 A2- onto the touch-up area inside the sanded surface.





## Touch-up system for two-part top coats

Mixing ratio for two-part top coat:

- Adjust the two-part top coat according to technical application information. Refer to [⇒ "3.7 Top Coats", page 160](#).

Painting:

- Paint over filler area thoroughly (overlapping spray applications).

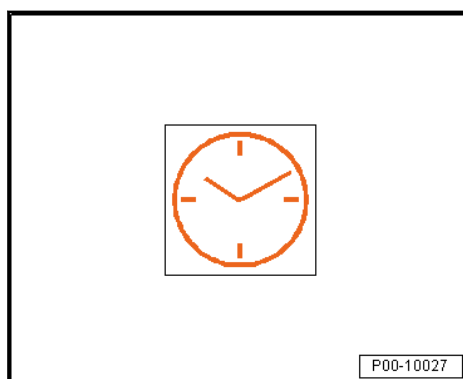
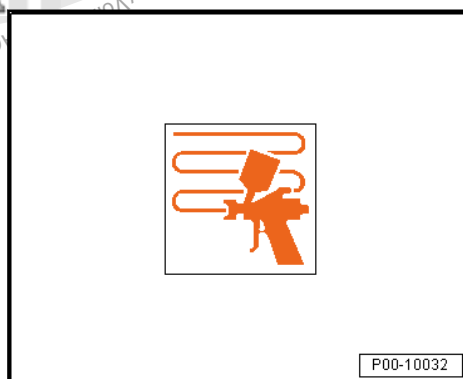
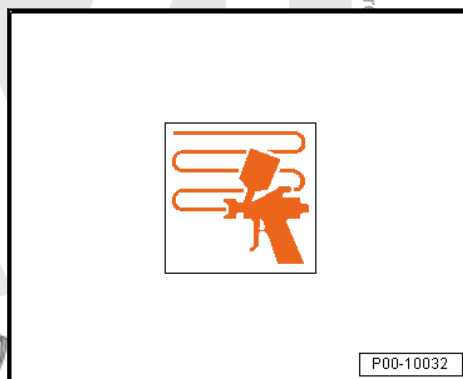
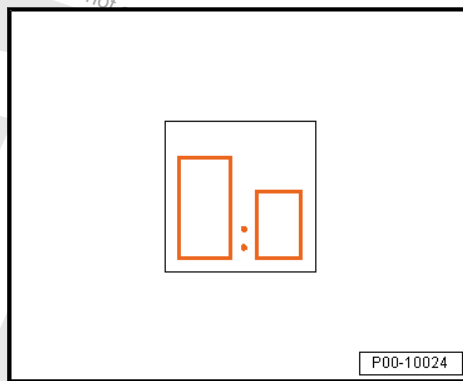
Touch-up process:

- Apply pure Blender - LVE 013 100 A2- onto the touch-up area inside the sanded surface.

## Polishing the touch-up zones

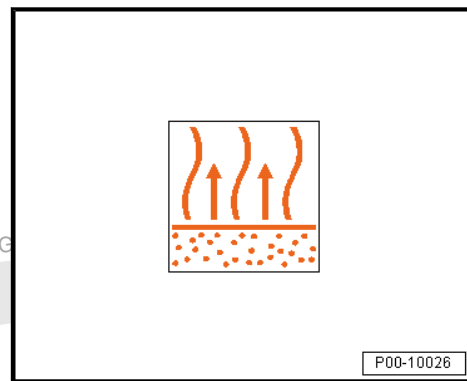
Air dry at +20 °C (68 °F) room temperature:

- ◆ Polish the touch-up areas after they have dried overnight



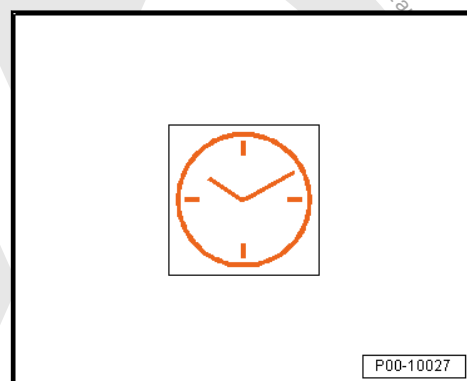


Final flash-off time with forced drying is a minimum of 5 to 10 minutes.

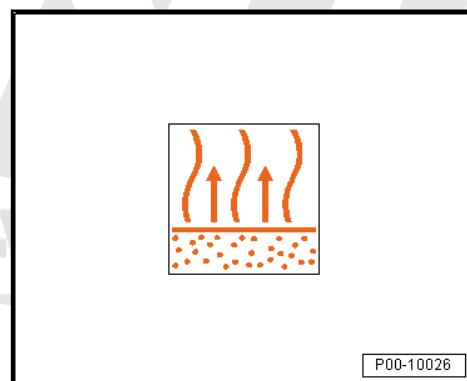


Forced drying is at +60 °C (140 °F) object temperature for 30 minutes.

- After that, allow the touch-up areas to cool off for an hour and polish at +20 °C (68 °F) room temperature.



Final flash-off time for IR drying is a minimum of 5 to 10 minutes.



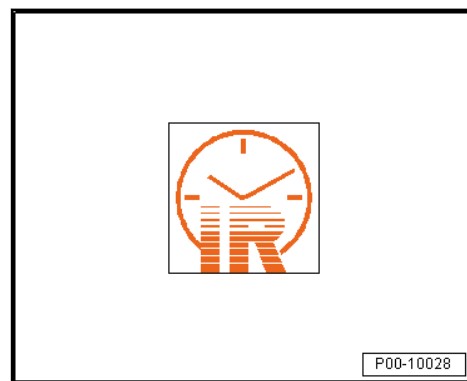
IR dry with a short-wave radiator for 10 minutes

- After that, allow the touch-up areas to cool off for an hour and polish at +20 °C (68 °F) room temperature.



#### Note

- ◆ *Polish the touch-up area with fine polishing paste by hand or with a polishing machine.*
- ◆ *To finish, treat the surface with high-gloss sealant.*





#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

#### Characteristics

Flashpoint:	+20 °C (68 °F)
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P00-10820

#### Storage

Blender was developed for hassle-free two-part clear coat and two-part top coat touch-up.

The guaranteed shelf life of 60 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



P00-10050

### 3.8.11 Race Blender

#### Definition:

- ◆ Race Blender - LVM 013 008 A2-

Race blender LVM 013 008 A2 may only be used with two-component HS race clear coat LZX 769 K08 A5.

#### Product Description

Race blender LVM 013 008 A2 may only be used with two-component HS race clear coat LZX 769 K08 A5.

#### Characteristics:

- ◆ Very good coating on fresh clear coat film as well as old paint.
- ◆ Very fine transition zone to the old and factory paint structure.
- ◆ Excellent etching ability and structure matching.
- ◆ Fine transition to the fade-out zone.
- ◆ Little polishing effort.
- ◆ Reliable, glossy result.

#### Application Instructions

##### Product preparation for STANDARD processing

Can be used with:

two-component, hardened	Two-component HS race clear coat LZX 769 K08 A5
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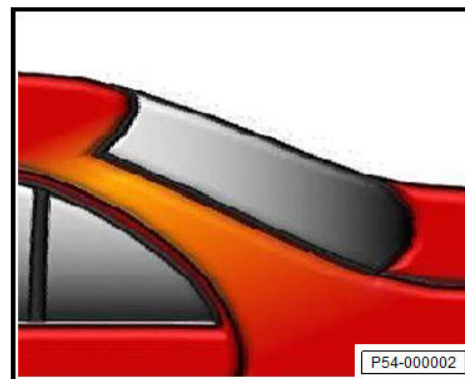
A product mix is not VOC-compliant.





### Touch-up painting for two-component HS race clear coat:

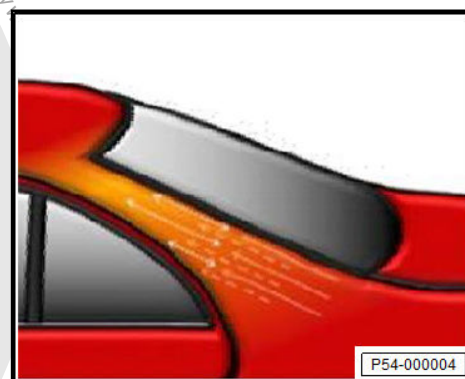
- ◆ Polish the run-out area with a coarse finishing compound and wipe away all residue.
- ◆ Sand the transition to the damaged location, for example, with 3M Trizact P3000 or similar abrasive materials from other manufacturers.
- ◆ Clean the prepared area with silicone remover LSW 019 000 A5.



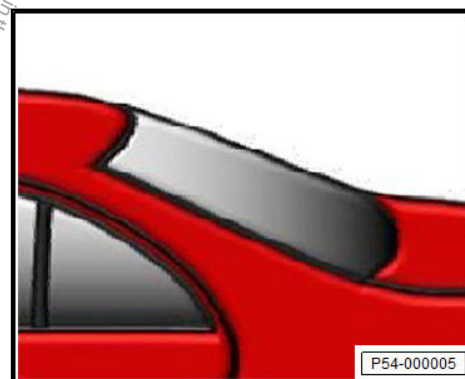
- ◆ Adjust the two-component HS race clear coat according to the data sheet.
- ◆ Use a ready-to-spray adjusted clear coat to paint over a suitable base coat quality.
- ◆ Touch-up paint the clear coat in graduated spray applications with reduced spray pressure in the sanded area and up to the edge of the polished area.



- ◆ Apply the pure race blender in thin spray applications in the polished touch-up area.
- ◆ Work with reduced spray pressure if using a spray gun.
- ◆ Loosen the spray mist setting and create a soft transition.
- ◆ Dry according to the clear coat data sheet.
- ◆ An additional IR re-drying of the touch-up paint zone can reduce the risk of edge cracking during polishing.



- ◆ If necessary and depending on the desired final result, the transition zone after drying and cooling can be lightly sanded with 3M Trizact P3000 or similar abrasive materials.
- ◆ Polish using a rotating polishing machine.
- ◆ Check the polishing pressure and always operate the rotation in the direction of the old paint.
- ◆ Do not polish against the touch-up paint edge.





### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

**Storage:** the guaranteed shelf life is 60 months from the production date. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



P00-10820

## 3.9 Hardener

⇒ [“3.9.1 Two-Part HS Hardener”, page 254](#)

⇒ [“3.9.2 Two-Part VHS Hardener and Two-Part VHS Performance Hardener”, page 258](#)

⇒ [“3.9.3 Two-Part Adhesive Filler Hardener”, page 262](#)

⇒ [“3.9.4 Aqua Premium Hardener”, page 262](#)

### 3.9.1 Two-Part HS Hardener



#### Definition:

- ◆ Two-Part HS Hardener - LHA 009 041 A3-
- ◆ Two-Part HS Hardener, Short - LHA 021 004 A3-
- ◆ Two-Part HS Hardener, Extra Short - LHA 009 046 A2-
- ◆ Two-Part HS Hardener, Long - LHA 009 047 A3-
- ◆ Two-Part HS Hardener, Extra Long - LHA 009 048 A3-

Edition 10/2014

#### Product Description

These are high solid hardeners for several HS fillers and clear coats.

#### Characteristics:

- ◆ It has a high solid content for economical and environmentally friendly application.
- ◆ The choice of five versions means it can adapt well to all painting conditions and ensure reliable application.

#### Application Instructions

##### Processing

Possible base components:

- ◆ Two-Part HS Vario Filler. Refer to ⇒ [“3.6.1 Two-Part HS Vario Filler”, page 106](#) .
- ◆ Two-Part HS Premium Filler. Refer to ⇒ [“3.6.2 Two-Part HS Premium Filler”, page 114](#) .
- ◆ Two-Part HS Wet-in-Wet Filler. Refer to ⇒ [“3.6.5 Two-Part HS Wet-in-Wet Filler”, page 131](#) .
- ◆ Two-Part HS Clear Coat. Refer to ⇒ [“3.8.1 Two-Part HS Clear Coat”, page 207](#) .



### Area of application

- 1 - The Two-Part HS Hardener - LHA 009 041 A3- is suitable for all complete and partial painting at normal temperatures.
- 2 - The Two-Part HS Hardener, Short - LHA 021 004 A3- is suitable for partial painting at low temperatures and low spray booth ventilation volumes.
- 3 - The Two-Part HS Hardener, Extra Short - LHA 009 046 A2- is suitable for spot repairs and partial painting at low temperatures.
- 4 - The Two-Part HS Hardener, Long - LHA 009 047 A3- is suitable for all complete and partial painting at high temperatures.
- 5 - The Two-Part HS Hardener, Extra Long - LHA 009 048 A3- is suitable for all complete and partial painting at very high temperatures and is characterized by its good flow properties.



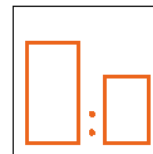


#### Mixture ratio:

- Refer to the technical application instructions for the respective base components

#### Hardener selection guide

- ++ - Optimum
- + - Suitable
- Partially suitable
- Not suitable



P00-10024

Hardener selection	Two-Part HS Hardener - LHA 009 041 A3-	Two-Part HS Hardener, Short - LHA 021 004 A3-	Two-Part HS Hardener, Extra Short - LHA 009 046 A2-
Partial or complete painting (large areas)	+	-	--
Partial painting (minor repairs)	+	++	++
High temperatures above +25 °C (77 °F)	+	--	--
Very high temperatures: +30 °C to +35 °C (86 °F to 95 °F)	-	--	--
Normal temperature +20 °C to +25 °C (68 °F to 77 °F)	++	-	--
Low temperature +15 °C to +20 °C (59 °F to 68 °F)		+	++
Oven drying	++	+	+
air drying	++	++	++

Hardener selection	Two-Part HS Hardener, Long - LHA 009 047 A3-	Two-Part HS Hardener, Extra Long - LHA 009 048 A3-
Partial or complete painting (large areas)	++	++
Partial painting (minor repairs)	+	--
High temperatures above +25 °C (77 °F)	+	++
Very high temperatures: +30 °C to +35 °C (86 °F to 95 °F)	+	++
Normal temperature +20 °C to +25 °C (68 °F to 77 °F)	++	+





Hardener selection	Two-Part HS Hardener, Long - LHA 009 047 A3-	Two-Part HS Hardener, Extra Long - LHA 009 048 A3-
Low temperature +15 °C to +20 °C (59 °F to 68 °F)	-	- -
Oven drying	++	++
air drying	+	+

#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

#### Characteristics

	Two-Part HS Hardener, Extra Short - LHA 009 046 A2-	All other two-part HS hardeners
Flash-point:	under +21 °C (69.8 °F)	above +23 °C (73.4 °F)

#### Storage

All two-part HS hardeners have a guaranteed shelf life of 36 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).

#### Storage Conditions

- Protect against moisture.



P00-10820



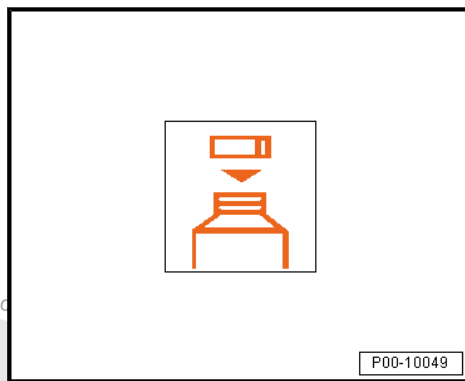
P00-10050



P00-10052



- Seal the container airtight immediately after removing the hardener.



### 3.9.2 Two-Part VHS Hardener and Two-Part VHS Performance Hardener

#### Definition:

- ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5-
- ◆ Two-Part VHS Hardener, Short - LHA 009 050 A2-
- ◆ Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3-
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-
- ◆ Two-Part VHS Performance Hardener - LVM 009 038 A2-
- ◆ Two-Part VHS Performance Hardener, Long - LVM 009 039 A2-

Edition 10/2014

#### Product Description

Two-part VHS hardeners and two-part VHS performance hardeners are suitable for use with high solid products.

#### Characteristics:

- ◆ It has a high solid content for economical and environmentally friendly application.
- ◆ Due to the variety of VHS and performance hardeners, they can adapt well to all painting conditions and ensure reliable application.

#### Application Instructions

##### Processing

Possible base components:



#### Note

*The two-part HS performance filler can only be processed with two-part VHS performance hardener.*

- ◆ Two-Part HS Vario Filler. Refer to ⇒ [“3.6.1 Two-Part HS Vario Filler”, page 106](#) .
- ◆ Two-Part HS Premium Filler. Refer to ⇒ [“3.6.2 Two-Part HS Premium Filler”, page 114](#) .
- ◆ Two-Part HS Performance Filler. Refer to ⇒ [“3.6.3 Two-Part HS Performance Filler”, page 120](#) .



- ◆ Two-Part HS Wet-in-Wet Filler. Refer to ⇒ [“3.6.5 Two-Part HS Wet-in-Wet Filler”, page 131](#) .
- ◆ Two-Part HS Top Coat. Refer to ⇒ [“3.7.1 Two-Part HS Top Coat”, page 160](#) .
- ◆ Two-Part HS Clear Coat. Refer to ⇒ [“3.8.1 Two-Part HS Clear Coat”, page 207](#) .
- ◆ Two-Part HS Optimum Plus Clear Coat. Refer to ⇒ [“3.8.5 Two-Part HS Optimum Plus Clear Coat”, page 227](#) .
- ◆ Two-Part HS Brilliant Plus Clear Coat. Refer to ⇒ [“3.8.7 Two-Part HS Brilliant Plus Clear Coat”, page 235](#) .
- ◆ Two-Part HS Performance Clear Coat. Refer to ⇒ [“3.8.8 Two-Part HS Performance Clear Coat”, page 240](#) .

#### Area of application



#### Note

*The two-part VHS performance hardeners are only to be used in the two-part HS performance filler.*

- 1 - The Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5- is suitable for all complete and partial painting at normal temperatures.
- 2 - The Two-Part VHS Hardener, Short - LHA 009 050 A2- is suitable for partial painting and low spray booth ventilation volumes.
- 3 - The Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3- is suitable for all complete and partial painting at high temperatures.
- 4 - The Two-Part VHS Hardener, Extra Long - LHA 009 053 A2- is suitable for all complete and partial painting at very high temperatures.
- 5 - The Two-Part VHS Performance Hardener - LVM 009 038 A2- is suitable for all complete and partial painting at normal temperatures.
- 6 - The Two-Part VHS Performance Hardener, Long - LVM 009 039 A2- is suitable for all complete and partial painting at very high temperatures.

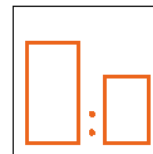


#### Mixture ratio:

- Refer to the technical application instructions for the respective base components

#### Hardener selection guide

- ++ - Optimum
- + - Suitable
- - Partially suitable
- - - Not suitable



P00-10024

Hardener selection	Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5-	Two-Part VHS Hardener, Short - LHA 009 050 A2-
Partial or complete painting (large areas)	+	- -
Partial painting (minor repairs)	+	++
High temperatures above +25 °C (77 °F)	+	- -
Very high temperatures: +30 °C to +35 °C (86 °F to 95 °F)	-	- -
Normal temperature +20 °C to +25 °C (68 °F to 77 °F)	++	- -
Low temperature +15 °C to +20 °C (59 °F to 68 °F)	-	++
Oven drying	++	+
air drying	++	++

Hardener selection	Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3-	Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-
Partial or complete painting (large areas)	+	++
Partial painting (minor repairs)	+	+
High temperatures above +25 °C (77 °F)	+	++
Very high temperatures: +30 °C to +35 °C (86 °F to 95 °F)	-	++
Normal temperature +20 °C to +25 °C (68 °F to 77 °F)	++	++
Low temperature +15 °C to +20 °C (59 °F to 68 °F)	-	-
Oven drying	++	++



Hardener selection	Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3-	Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-
air drying	++	+

Hardener selection	Two-Part VHS Performance Hardener - LVM 009 038 A2-	Two-Part VHS Performance Hardener, Long - LVM 009 039 A2-
Partial or complete painting (large areas)	+	++
Partial painting (minor repairs)	+	+
High temperatures above +25 °C (77 °F)	+	++
Very high temperatures: +30 °C to +35 °C (86 °F to 95 °F)	-	++
Normal temperature +20 °C to +25 °C (68 °F to 77 °F)	++	++
Low temperature +15 °C to +20 °C (59 °F to 68 °F)		-
Oven drying	++	++
air drying	++	+

#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

#### Characteristics

	All VHS hardeners
Flashpoint:	+24 °C (75.2 °F)

#### Storage

The guaranteed shelf life of VHS hardeners is 36 months from date of manufacture. The guaranteed shelf life of VHS performance hardeners is 12 months. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



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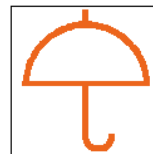


P00-10050



### Storage Conditions

- Protect against moisture.



P00-10052

- Seal the container airtight immediately after removing the hardener.



P00-10049

### 3.9.3 Two-Part Adhesive Filler Hardener

#### Definition:

- ◆ Two-Part Adhesive Filler Hardener - LHA 005 000 A2-



#### Note

*The usage and application instructions for the two-part adhesive filler hardener are described in the appropriate base component. Refer to ➔ ["3.6.4 Two-Part Plastic Adhesive Filler", page 127](#).*

### 3.9.4 Aqua Premium Hardener

#### Definition:

- ◆ Aqua Premium Hardener - LVM 045 000 A1-



#### Note

*The usage and application instructions for the two-part adhesive filler hardener are described in the appropriate base component. Refer to ➔ ["3.7.5 Aqua Premium System", page 184](#).*



## 3.10 Thinners

⇒ [“3.10.1 Two-Part Thinner”, page 263](#)

⇒ [“3.10.2 HS Spot Thinner”, page 266](#)

⇒ [“3.10.3 Purified Water”, page 268](#)

### 3.10.1 Two-Part Thinner

#### Definition:

- ◆ Two-Part Thinner - LVE 009 001 A5-
- ◆ Two-Part Thinner, Long - LVM 009 300 A2-
- ◆ Two-Part Thinner, Plus - LHA 014 000 A5-
- ◆ Two-Part Thinner, Special - LVM 009 200 A2- / -LVM 009 200 A5-
- ◆ Nitro Thinner - LVE 856 000 A3-

Edition 04/2013

#### Product Description

The following section describes the VW thinners that are optimally suited to vehicle paint repairs.

These thinners can be used to alter the viscosity of the base products to achieve the best application under all conditions.



#### Note

*They may not be used for thinning water-based base paints.*



## Application Instructions

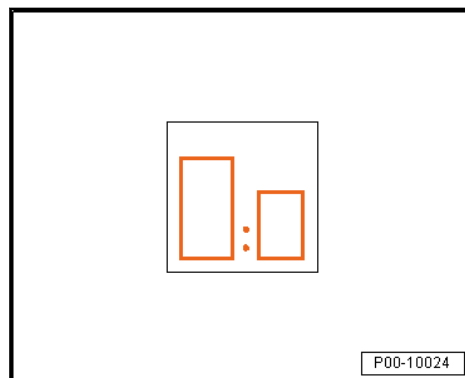
### Area of application

Mixture ratio:

- Refer to the technical application instructions for the respective base components

### Thinner selection

- ++ - Optimum
- + - Suitable
- Partially suitable
- Not suitable



### Note

*This table gives a general overview of the options for using the thinners listed here. Any additional information in the technical application information for the respective base component should take precedence.*

Two-Part Thinner	Two-Part Thinner - LVE 009 001 A5-	Two-Part Thinner, Long - LVM 009 300 A2-	Two-Part Thinner, Plus - LHA 014 000 A5-	Two-Part Thinner, Special - LVM 009 200 A2- / - LVM 009 200 A5-
Two-Part HS Top Coat	+	++*	+	++
Two-Part HS Clear Coat**	--	--	--	++
Two-Part Acrylic Primer/Filler	++	+	++	++
Wash Primer	++	-*	++	++
* Only for temperatures above +25 °C (77 °F)				
** Two-part HS clear coat which is used in a 3:1 mixing ratio with two-part VHS hardeners plus thinner.				





# Main areas of application and thinner uses

Two-Part Thinner	Two-Part Thinner - LVE 009 001 A5-	Two-Part Thinner, Long - LVM 009 300 A2-	Two-Part Thinner, Plus - LHA 014 000 A5-	Two-Part Thinner, Special - LVM 009 200 A2-/LVM 009 200 A5-	Nitro Thinner - LVE 856 000 A3-
Main area of application	Universally applicable thinner for all two-part acrylic products	The specially designed thinner with viscosity-reducing properties is especially suitable for the two-part HS top coat, two-part acrylic filler.	Usable thinner for all two-part acrylic products with drying accelerator	A specially designed thinner with viscosity-reducing properties is especially suitable for the two-part HS top coat, two-part acrylic filler and two-part HS clear coat, which are used in a 3:1 ratio with two-part VHS hardeners plus thinner.	Equipment cleaner and degreaser
Use	For adjusting viscosity of base materials and top coats at low and moderate temperatures	For optimizing and improving the paint mist adhesion at spray booth temperatures above +25 °C (77 °F) and the presence of large surfaced objects at the same time.	For adjusting viscosity of base materials and top coats at low and moderate temperatures	For adjusting viscosity of base materials and top coats at low and moderate temperatures	The EU limit for this product (product category IIB.a) in its ready-to-use form is a maximum of 850 g (30 oz)/L volatile organic compounds. VOC value: 2004/42/ IIB (a) (850) 840



Two-Part Thinner	Two-Part Thinner - LVE 009 001 A5-	Two-Part Thinner, Long - LVM 009 300 A2-	Two-Part Thinner, Plus - LHA 014 000 A5-	Two-Part Thinner, Special - LVM 009 200 A2- / -LVM 009 200 A5-	Nitro Thinner - LVE 856 000 A3-
Characteristics	Flash-point above +23 °C (73.4 °F)	Flash-point above +23 °C (73.4 °F)	Flash-point above +23 °C (73.4 °F)	Flash-point above +23 °C (73.4 °F)	Flash-point above +23 °C (73.4 °F)

#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application



P00-10820

#### Storage

All thinners have a guaranteed shelf life of 60 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



P00-10050

### 3.10.2 HS Spot Thinner

#### Definition:

- ◆ HS Spot Thinner - LVM 006 000 A2-

Edition 06/2013

#### Product Description

HS Spot Thinner - LVM 006 000 A2- is a special drying accelerator for minor repairs in certain Two-Part HS Clear Coats and Two-Part HS Top Coats . The clear coat and top coat remain VOC compliant at the specified mixture.

#### Use:

- ◆ Clever repair area of application
- ◆ Only for small surfaces
- ◆ Do not apply to horizontal surfaces



## Application Instructions

### Base surface

See the technical application instructions for the respective base component

Suitable preliminary coatings:

- ◆ Two-Part HS Brilliant Plus Clear Coat - LZK 769 K05 A5-
- ◆ HS Vario Clear Coat - L2K 769 K01 A5-
- ◆ Two-Part HS Performance Clear Coat - LZK 769 K06 A5-
- ◆ Two-Part HS Optimum Plus Clear Coat - LZK 769 K07 A5-
- ◆ Two-Part HS Solid Top Coat - L2K 073 ... ..-
- ◆ Two-Part HS Mixed Paint - L2K 074 ... ..-

### Processing

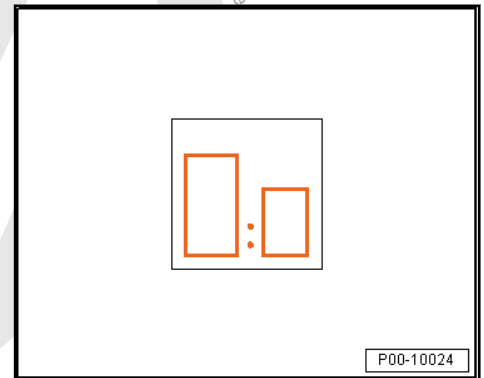
Mixture ratio:

– 3:1 by volume with:

- ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5-
- ◆ Two-Part VHS Hardener, Short - LHA 009 050 A2-

Dilutable with:

- ◆ HS Spot Thinner - LVM 006 000 A2- (HS spot thinner is added instead of Two-Part Thinner, Special - LVM 009 200 A2- / -LVM 009 200 A5- )
- ◆ +5 % for Two-Part HS Brilliant Plus Clear Coat - LZK 769 K05 A5-
- ◆ + 12.5 % for HS Vario Clear Coat - L2K 769 K01 A5-
- ◆ +5 % for Two-Part HS Performance Clear Coat - LZK 769 K06 A5-
- ◆ + 10 % for Two-Part HS Optimum Plus Clear Coat - LZK 769 K07 A5-
- ◆ +12.5 % at Two-Part HS Solid Top Coat - L2K 073 ... ..- / Two-Part HS Mixed Paint - L2K 074 ... ..-



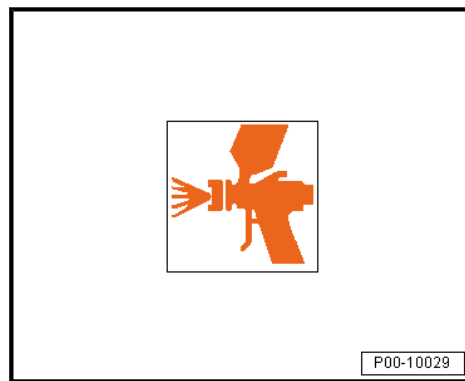


#### Working time/pot life:

- Ready to spray in 35 to 45 minutes at +20 °C (68 °F) (clear coat with Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5- )
- Ready to spray in 50 to 60 minutes at +20 °C (68 °F) (clear coat with Two-Part HS Solid Top Coat - L2K 073 ... - / Two-Part HS Mixed Paint - L2K 074 ... - )

#### Application:

- For the application of the clear coat and the two-part HS mixed/top coat, refer to the respective technical application information.



#### Note

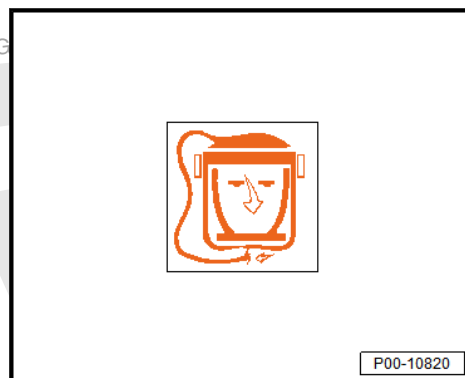
- ◆ *Technological disadvantages can occur with large surface applications and horizontal surfaces (the hood, for example).*
- ◆ *A "short" hardening system is preferred when using inside the clever repair system.*

#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

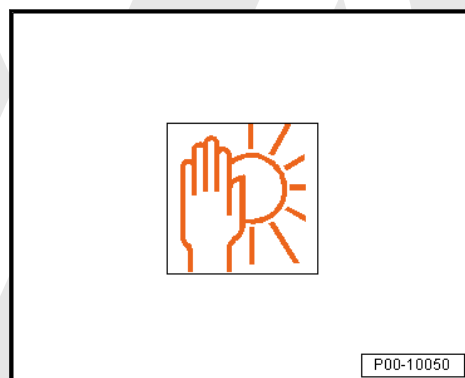
#### Characteristics

Flashpoint:	+21 °C (69.8 °F)
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#### Storage

The HS spot thinner has a guaranteed shelf life of 24 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



### 3.10.3 Purified Water

#### Definition:

- ◆ Aquaplast Purified Water - LVW 010 000 A5-



#### Note

*The technical application information for this product is not required.*



## 3.11 Preservation

⇒ [“3.11.1 Preserving Wax”, page 269](#)

⇒ [“3.11.2 Cavity Sealant”, page 270](#)

⇒ [“3.11.3 Preserving Wax \(Spray Can\)”, page 271](#)

### 3.11.1 Preserving Wax

#### Definition:

- ◆ Preserving Wax - D 321 M15 M1-
- ◆ Preserving Wax - D 321 M16 M2-

Edition 04/2009

#### Product Description

The Preserving Wax - D 321 M15 M1- and Preserving Wax - D 321 M16 M2- are spray-on wax-based rust-protection agents.

Preserving wax is thin.

After drying, a strongly adhesive, viscous plastic-like and water-proof film which is more or less colorless.

The flow point of the dry substance is over +100 °C (212 °F), meaning that running or dripping is unlikely even in the engine compartment.

The dry film adheres well to bare and painted surfaces.

#### Application Instructions

##### Application

- ◆ Is used for the preservation of seams, surfaces and cavities in vehicles.
- ◆ Its bright color makes it especially suitable for protecting the seams of the hood and in the luggage compartment.
- ◆ The material is also preferred for treating the cleaned engine compartment.

#### Processing



#### Note

- ◆ *Before starting to apply, it is necessary to read the safety measures and advice in the safety data sheet.*
- ◆ *Even for products which are not required to be labeled by law, the usual safety measures must be observed for chemical emissions.*
- Apply with a atomizer
- Thoroughly clean and dry the parts that are to be treated with preserving wax. Remove any rust.
- Shake the can well before use. Spray on the preserving wax and let it dry. It should not be sprayed on visible exterior parts as the dry film has a matte appearance.



#### Caution

*When preserving the engine compartment of vehicles and motors of other equipment, the engines or motors should only be switched on after the protective wax film has been allowed to ventilate thoroughly. There is a danger of explosions due to evaporated solvents!*

#### Technical Data

Color	Transparent in thin coats
Odor	Mild odor
Viscosity (DIN 53211, 4 mm)	12 to 14 seconds
Dropping point	Approximately 100 °C (212 °F)
Cleaning	With turpentine, cold cleaner or kerosene
Processing temperature	+15 °C to +30 °C (59 °F to 86 °F)

### 3.11.2 Cavity Sealant

#### Definition:

- ◆ Cavity Sealant - D 329 215 M2-
- ◆ Cavity Sealant - D 329 215 M1-

#### Product Description

Cavity Sealant - D 329 215 M2- and Cavity Sealant - D 329 215 M1- are solvent-free corrosion protection coatings to seal cavities.

The hardened protective film has very good adhesion to various metallic base surfaces (such as steel, zinc, cathophoretic dip coating (CDC), phosphated surfaces).

It offers excellent long-term corrosion protection from a layer thickness of approximately 30 µm.

- ◆ Spraying makes it easy to use.
- ◆ Quality control with UV light.
- ◆ Controlled flow behavior, possible support from a drop-stop effect.
- ◆ Excellent high-temperature stability of the hardened film.
- ◆ Hardening at room temperature
- ◆ 100% active ingredient, solvent-free, VOC-free.

The product can thicken in cold / hot storage temperatures or during transport. If this is the case, it can be restored to its original condition by stirring it gently once the product has reached room temperature.

#### Application Instructions

##### Application

- ◆ Processing developed with commercially available airless and air-mix application systems at room temperature. Application using a brush is also possible under certain requirements, such as in the case of repairs.



- ◆ Overspray can be removed with suitable cleaners, even if the product has already hardened.



#### Note

- ◆ *Before starting to apply, it is necessary to read the safety measures and advice in the safety data sheet.*
- ◆ *Even for products which are not required to be labeled by law, the usual safety measures must be observed for chemical emissions.*

Hardening at room temperature.

Ensure sufficient ventilation.

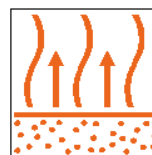


#### Note

*Depending on the type of the cavity to be treated, the drying phase can last several days. Ensure that the vehicle is well ventilated during the drying process.*



P00-10027



P00-10026

### 3.11.3 Preserving Wax (Spray Can)

#### Definition:

- ◆ Preserving Wax - D 308 SP5 A1-

Edition 04/2009

#### Product Description

The Preserving Wax - D 308 SP5 A1- provides optimal corrosion protection for areas in the body that are most at risk for corrosion, such as steel trim (folded edges, gaps, flanges), edges and surfaces.

This long-term corrosion protection is established through sufficient penetration as well as exceptional adhesion to the metallic surface.

The top coat compatibility and removability as well as the compatibility with the rubber and plastic attachments is created.

#### Application Instructions

##### Application

- ◆ The recommended dry layer thickness is approximately 30 µm.



## Technical Data

Propane-butane content	45 to 49 %
Active ingredient content	22 to 26 %
Solvent content	27 to 31 %
Viscosity (DIN 53211, 4 mm)	16 to 22 seconds
Dropping point (of solid matter)	> 150 °C (302 °F)
Cleaning	With mineral spirits
Processing temperature	+18 °C (64.4 °F) through +25 °C (77 °F)
Flashpoint PM (DIN EN 22719)	+27 through +33 °C (91.4 °F)
Color	Light beige
Application temperature	+10 °C to +30 °C (50 °F to 86 °F)
Frost resistance	Through -30 °C (-22 °F)

## 3.12 Underbody Protection

⇒ ["3.12.1 Long-Term Underbody Protection D 314 D36 M2, Gray", page 272](#)

⇒ ["3.12.2 Long-Term Underbody Protection D 314 D37 M2, Black", page 275](#)

⇒ ["3.12.3 Long-Term Underbody Protection D 314 D38 M2, Bright Color", page 278](#)

⇒ ["3.12.4 Underbody Protection D 314 D39 A3, Black", page 281](#)

### 3.12.1 Long-Term Underbody Protection - D 314 D36 M2- , Gray

#### Definition:

◆ Long-Term Underbody Protection- D 314 D36 M2- , Gray

Edition 02/2010

#### Product description of Long-Term Underbody Protection - D 314 D36 M2- , gray

Long-Term Underbody Protection - D 314 D36 M2- is a gray coating compound with a watery synthetic dispersion base that is sprayed with a Spray Gun - VAG 1379- .

The drying time depends on the layer thickness, ambient temperature and the surrounding humidity. Good ventilation and higher temperatures quicken the drying time.

The dried film shows good adhesion to galvanized and cathodic primed steel panels, as well as painted base surfaces. Due to the high resistance to abrasion and low-temperature flexibility, the long-term underbody protection is characterized by its quality stone chip protection characteristics.





The long-term underbody protection can be quickly painted over with water-based paints.

After air drying (approximately two to three hours), the material can also be painted over with conventional painting systems (contains solvents).

The dried coat sands easily after hardening.

The long-term underbody protection is used to reestablish the original structure after a repair.

The material is only temporarily resistant to gasoline and cold cleaners.

### Application

- ◆ Long-Term Underbody Protection - D 314 D36 M2- is suited for repair work on the underbody, wheel housing, front and rear areas. It is used on visible components, such as on the side sill, as paintable protection against stone impact, road salt and moisture corrosion.
- ◆ The material is used to reestablish different surface structures on vehicles of all types after a repair.
- ◆ The long-term underbody protection is suitable for dampening the sound of luggage compartments, hoods, wheel housings, and side panels as well as covering and sealing repaired surfaces, welded joints and overlaps.



### Note

- ◆ *Before starting to apply, it is necessary to read the safety measures and advice in the safety data sheet.*
- ◆ *Even for products which are not required to be labeled by law, the usual safety measures must be observed for chemical emissions.*

### Processing

- ◆ Clean the surfaces to be treated well beforehand and remove any rust.
- ◆ The surfaces must be free from dirt and dust, dry and grease-free.
- ◆ Surfaces which are not to be coated should be covered with paper.
- ◆ Bare steel surfaces are to be primed before applying the long-term underbody protection.
- ◆ The long-term underbody protection is applied using the Spray Gun - VAG 1379- from the 1 L can. The application pressure is 4 to 5 bar (58.02 to 72.52 psi).
- ◆ Shake the can contents vigorously for one minute before using.



#### Caution

**Do not spray onto the steering, engine, drive axle, exhaust, catalytic converter and brake systems.**

**Blow out the Spray Gun - VAG 1379- immediately after using and then flush it with Plastic Cleaner - D 195 850 A1- .**

**If the spray gun becomes blocked the can may burst!**

**Pay attention to the Spray Gun - VAG 1379- operating instructions.**

#### Painting over



#### Note

*The long-term underbody protection can be painted over with water-based and solvent-containing paints. Due to the large number of available systems on the market, testing is necessary.*

##### 1 - Painting Over with Water-Soluble Paints:

- After a short drying period (matte surface), the long-term underbody protection can be painted over up to 72 hours after applying with water-soluble paints.

##### 2 - Painting Over with Conventional (Solvent-Containing) Paints:

- After drying, the long-term underbody protection can be painted over up to 72 hours after applying with conventional (solvent-containing) paints. The material has a quick-drying thick layer system. If accelerating the drying period in an airflow, then make sure that the rapidly forming film is not being actively blown onto the material that is still drying. This could lead to crack formation.

#### Cleaning

- ◆ Splashes on painted surfaces should be removed immediately using Plastic Cleaner - D 195 850 A1- .
- ◆ Equipment or the dirty parts of the equipment should be cleaned after applying water, and if necessary, adding of a watery cleaner. Do not use any solvent-containing cleaners (clotting). After drying, the long-term underbody protection can only be removed using a tool.

#### Technical Data

Technical Data:	
Color	Grey
Odor	Slightly like ammonia
Density	Approximately 1.22 g (0 oz)/cm <sup>3</sup>
Solid matter content	Approximately 67 %
Viscosity:	0.5 Pas
Measuring instrument	Physica
Measuring system	Z 4
Wet application thickness	1 mm



Thinner/ cleaner	Distilled water
Processing temperature	+10 °C to +25 °C (50 °F to 77 °F)
Application temperature	-25 °C to +80 °C (-13 °F to 176 °F) (short-term, up to one hour at +100 °C (212 °F))
Acoustic data:	
Dissipation factor DIN 53440	Approximately 0.10
Temperature	20 °C (68 °F)
Frequency	200 Hz
Material	1 mm steel panel
Coating to panel thick- ness ratio	2:1

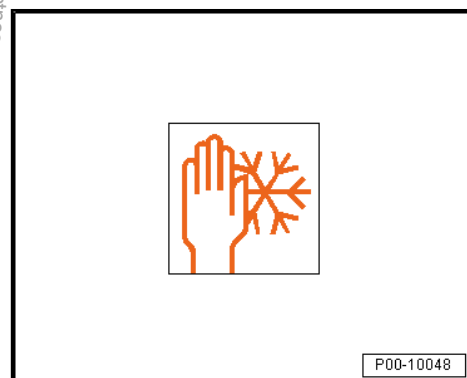
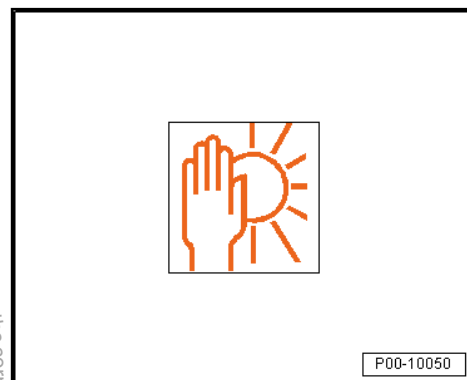
### Storage

The guaranteed shelf life is 12 months from the production date. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).

### Storage Conditions

The recommended storage temperature for the long-term underbody protection is +10 °C to 25 °C (50 °F to 77 °F).

The long-term underbody protection is vulnerable to frost. It must not fall below +5 °C (41 °F).



## 3.12.2 Long-Term Underbody Protection - D 314 D37 M2- , Black

### Definition:

- ◆ Long-Term Underbody Protection - D 314 D37 M2- , Black

Edition 02/2010

### Product description of Long-Term Underbody Protection - D 314 D37 M2- , black

Long-Term Underbody Protection - D 314 D367 M2- is a black coating compound with a watery synthetic dispersion base that is sprayed with a UBS gun.

The drying time depends on the layer thickness, ambient temperature and the surrounding humidity. Good ventilation and higher temperatures quicken the drying time.



The dried film shows good adhesion to galvanized and cathodic primed steel panels, as well as painted base surfaces. Due to the high resistance to abrasion and low-temperature flexibility, the long-term underbody protection is characterized by its quality stone chip protection characteristics.

The long-term underbody protection can be quickly painted over with water-based paints.

After air drying (approximately two to three hours), the material can also be painted over with conventional painting systems (contains solvents).

The dried coat sands easily after hardening.

The long-term underbody protection is used to reestablish the original structure after a repair.

The material is only temporarily resistant to gasoline and cold cleaners.

### Application

- ◆ Long-Term Underbody Protection - D 314 D36 M2- is suited for repair work on the underbody, wheel housing, front and rear areas. It is used on visible components, such as on the side sill, as paintable protection against stone impact, road salt and moisture corrosion.
- ◆ The material is used to reestablish different surface structures on vehicles of all types after a repair.
- ◆ The long-term underbody protection is suitable for dampening the sound of luggage compartments, hoods, wheel housings, and side panels as well as covering and sealing repaired surfaces, welded joints and overlaps.



### Note

- ◆ *Before starting to apply, it is necessary to read the safety measures and advice in the safety data sheet.*
- ◆ *Even for products which are not required to be labeled by law, the usual safety measures must be observed for chemical emissions.*

### Processing

- ◆ Clean the surfaces to be treated well beforehand and remove any rust.
- ◆ The surfaces must be free from dirt and dust, dry and grease-free.
- ◆ Surfaces which are not to be coated should be covered with paper.
- ◆ Bare steel surfaces are to be primed before applying the long-term underbody protection.
- ◆ The long-term underbody protection is applied from the 1 L can using the UBS spray gun. The application pressure is 4 to 5 bar (58.02 to 72.52 psi).
- ◆ Shake the can contents vigorously for one minute before using.



#### Caution

***Do not spray onto the steering, engine, drive axle, exhaust, catalytic converter and brake systems.***

***Blow out the spray gun immediately after use and then rinse it with Plastic Cleaner - D 195 850 A1- .***

***If the spray gun becomes blocked the can may burst!***

***Observe the operating instructions of the UBS spray gun!***

#### Painting over



#### Note

***The long-term underbody protection can be painted over with water-based and solvent-containing paints. Due to the large number of available systems on the market, testing is necessary.***

##### 1 - Painting Over with Water-Soluble Paints:

- After a short drying period (matte surface), the long-term underbody protection can be painted over up to 72 hours after applying with water-soluble paints.

##### 2 - Painting Over with Conventional (Solvent-Containing) Paints:

- After drying, the long-term underbody protection can be painted over up to 72 hours after applying with conventional (solvent-containing) paints. The material has a quick-drying thick layer system. If accelerating the drying period in an airflow, then make sure that the rapidly forming film is not being actively blown onto the material that is still drying. This could lead to crack formation.

#### Cleaning

- ◆ Splashes on painted surfaces should be removed immediately using Plastic Cleaner - D 195 850 A1- .
- ◆ Equipment or the dirty parts of the equipment should be cleaned after applying water, and if necessary, adding of a watery cleaner. Do not use any solvent-containing cleaners (clotting). After drying, the long-term underbody protection can only be removed using a tool.

#### Technical Data

Technical Data:	
Color	Black
Odor	Slightly like ammonia
Density	Approximately 1.22 g (0 oz)/cm <sup>3</sup>
Solid matter content	Approximately 67 %
Viscosity:	0.5 Pas
Measuring instrument	Physica
Measuring system	Z 4
Wet application thickness	1 mm



Thinner/ cleaner	Distilled water
Processing temperature	+10 °C to +25 °C (50 °F to 77 °F)
Application temperature	-25 °C to +80 °C (-13 °F to 176 °F) (short-term, up to one hour at +100 °C (212 °F))
Acoustic data:	
Dissipation factor DIN 53440	Approximately 0.10
Temperature	20 °C (68 °F)
Frequency	200 Hz
Material	1 mm steel panel
Coating to panel thick- ness ratio	2:1

### Storage

The guaranteed shelf life is 12 months from the production date. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



P00-10050

### Storage Conditions

The recommended storage temperature for the long-term underbody protection is +10 °C to +25 °C (50 °F to 77 °F).

The long-term underbody protection is vulnerable to frost. It must not fall below +5 °C (41 °F).



P00-10048

## 3.12.3 Long-Term Underbody Protection - D 314 D38 M2- , Bright Color

### Definition:

- ◆ Long-Term Underbody Protection - D 314 D38 M2- , Bright Color

Edition 02/2010

### Product Description

Long-Term Underbody Protection - D 314 D38 M2- is a bright, transparent coating compound (not opaque) with a watery synthetic dispersion base that is sprayed with a UBS, paint or filler spray gun.





The drying time depends on the layer thickness, ambient temperature and the surrounding humidity. Good ventilation and higher temperatures quicken the drying time.

The dried film shows good adhesion to galvanized and cathodic primed steel panels, as well as painted base surfaces. Due to the high resistance to abrasion and low-temperature flexibility, the long-term underbody protection is characterized by its quality stone chip protection characteristics.

The long-term underbody protection can be quickly applied/painted over with water-based paints.

After air drying (approximately two to three hours), the material can also be painted over with conventional painting systems (contains solvents).

The long-term underbody protection can be colored, mixed with water-based paints and diluted with demineralized water. To color, an addition of up to 30 % volume of ready to spray water-based paint is possible.

Due to the variations of mixture ratios, application pressures and intervals, smooth surfaces and fine to coarse structures can be produced.

The material is only temporarily resistant to gasoline and cold cleaners.

#### Application

- ◆ Long-Term Underbody Protection - D 314 D38 M2- is suited for repair work on the underbody, wheel housing, front and rear areas. It is used on visible components, such as on the side sill, as paintable protection against stone impact, road salt and moisture corrosion.
- ◆ The material is used to reestablish different surface structures on vehicles of all types after a repair.
- ◆ The variable pigmentability is of a particular advantage. Any possible scratches or stone impacts become almost invisible.



#### Note

- ◆ *Before starting to apply, it is necessary to read the safety measures and advice in the safety data sheet.*
- ◆ *Even for products which are not required to be labeled by law, the usual safety measures must be observed for chemical emissions.*

#### Processing

- ◆ Clean the surfaces to be treated well beforehand and remove any rust.
- ◆ The surfaces must be free from dirt and dust, dry and grease-free.
- ◆ Surfaces which are not to be coated should be covered with paper.
- ◆ Bare steel surfaces are to be primed before applying the long-term underbody protection.
- ◆ The long-term underbody protection can be applied to all conventional sealants (except silicone) and is characterized by its good adhesion.
- ◆ The long-term underbody protection surface can become weaker with plasticized sealants and also have a certain



tackiness. However the material does not lose its adhesiveness.

- ◆ Shake the can contents thoroughly before using.
- ◆ The long-term underbody protection is applied using rust-proof filler or paint spray guns. The material can be diluted with distilled or demineralized water (purified water) for adjustment (maximum 10% of volume addition).
- ◆ The first layer should not be applied too thickly (12 spray application).
- ◆ The long-term underbody protection is mixable with spray-ready water-based paints (maximum 30% of volume addition).
- ◆ The replicate the conventional structures, the best results are achieved using a 10-15 % spray-ready painting technique.
- ◆ The material should be filtered using a paint strainer before applying.



#### Caution

***Do not spray onto the steering, engine, drive axle, exhaust, catalytic converter and brake systems.***

***Blow out the spray gun immediately after use and then rinse it with Plastic Cleaner - D 195 850 A1- .***

***If the spray gun becomes blocked the can may burst!***

***Observe the operating instructions of the UBS spray gun!***

#### Painting over



#### Note

*The long-term underbody protection can be painted over with water-based and solvent-containing paints. Due to the large number of available systems on the market, testing is necessary.*

- 1 - Painting Over with Water-Soluble Paints:
  - After a short drying period (matte surface), the long-term underbody protection can be painted over up to 72 hours after applying with water-soluble paints.
- 2 - Painting Over with Conventional (Solvent-Containing) Paints:
  - After drying, the long-term underbody protection can be painted over up to 72 hours after applying with conventional (solvent-containing) paints. The material has a quick-drying thick layer system. If accelerating the drying period in an airflow, then make sure that the rapidly forming film is not being actively blown onto the material that is still drying. This could lead to crack formation.

#### Cleaning

- ◆ Splashes on painted surfaces should be removed immediately using Plastic Cleaner - D 195 850 A1- .
- ◆ Equipment or the dirty parts of the equipment should be cleaned after applying water, and if necessary, adding of a watery cleaner. Do not use any solvent-containing cleaners





(clotting). After drying, the long-term underbody protection can only be removed using a tool.

#### Technical Data

Technical Data:	
Color	Whitish, not opaque
Odor	Slightly like ammonia
Density	Approximately 1.25 g (0 oz)/cm <sup>3</sup>
Solid matter content	Approximately 70 %
Viscosity:	1 Pas
Measuring instrument	Rheomat STV
Measuring system	Rotor 30
Speed	200 UpM
Stability	Up to 1 mm wet
Processing temperature	+10 °C to +25 °C (50 °F to 77 °F)
Application temperature	-25 °C to +80 °C (-13 °F to 176 °F) (short-term, up to one hour at +100 °C (212 °F))

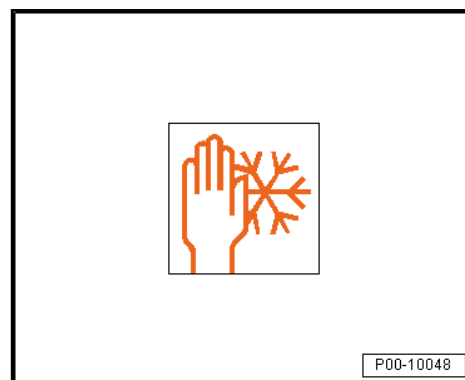
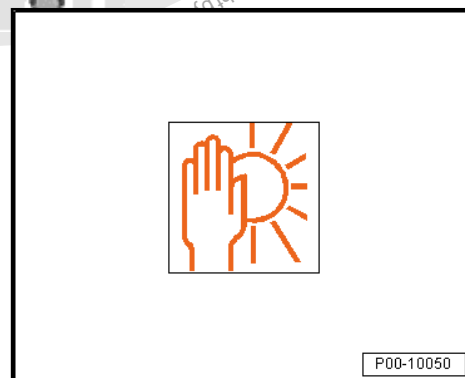
#### Storage

Guaranteed shelf life of 12 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).

#### Storage Conditions

The recommended storage temperature for the long-term underbody protection is +10 °C to 25 °C (50 °F to 77 °F).

The long-term underbody protection is vulnerable to frost. It must not fall below +5 °C (41 °F).



### 3.12.4 Underbody Protection - D 314 D39 A3- , Black

#### Definition:

◆ Underbody Protection - D 314 D39 A3- , Black

Edition 08/2015

#### Product Description:

This underbody protection features active corrosion protection, high adhesion strength, good edge protection, optimal base



surface wetting, high opacity, easy processability, among other things. It can also be successfully used on base surfaces with surface rust that was de-rusted manually. The underbody protection penetrates the surfaces and prevents any further rusting.

In its delivery form, it is painted and rolled on. It can be sprayed on with every system after adding thinner. Can be used between +5 to 30 °C (41 to 86 °F); one-part. Air-drying; do not use heat-forced drying. Dust dry after approximately 30 minutes; it can be reworked at any time without having to sand it down.

Can be used directly on steel, aluminum, stainless steel, galvanized sheet metals as well as other materials (particularly suitable for composite designs); adheres well to workable old coatings and base coatings. Rusty surfaces or parts must be carefully de-rusted (by hand) so that the base surface is workable. For rough surfaces, specifically ensure an adequate layer thickness.

#### Application:

Underbody Protection - D 314 D39 A3- is base surface tolerant and tolerates processing. Therefore it is particularly well suited for repair work. This high solid material contains solvents (VOC compliant) and must not be thinned with water.



#### WARNING

*Read the safety precautions (keeping away from ignition sources, ventilation) in the warnings on the label (and in the safety data sheet, if necessary).*

#### Processing:



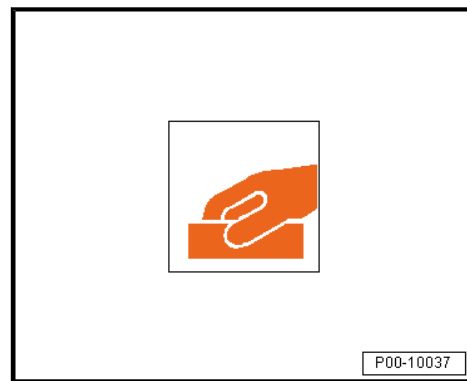
P00-10038



- Clean the surfaces to be treated.
- Remove as much rust as possible. If necessary, tape off the surfaces that are not going to be coated. Apply the underbody protection.
- Apply the underbody protection. Make sure that the critical areas (angles, edges, holes, weld seams, etc.) are given enough of the material.

If necessary, prepare the critical areas or rework them again (at any time).

Can be used on all conventional sealants (except silicone). On plasticized sealants (the places that should not be reworked with one-part materials), the underbody protection surface may remain tacky. In general it is better to apply the underbody protection first (corrosion protection, adhesion strength), and then apply the sealants.



#### Note

- ◆ *Stir the can contents well before using. This is important because it is not so evident with the "black" color.*
- ◆ *Paint/roll on in its delivery form. For spraying, thin 0 to 10 % according to the procedure.*
- ◆ *This coating material cannot be sanded (thermoplastic) until a long time after applying. Cut any undesired drip formations with a sharp knife.*

#### Painting Over:

After drying, it can be painted over with one or two-part paints if desired. The solvent (also in the water-based paint) lightly softens the surface so that a perfect bond can form. If in doubt, perform preliminary tests.

#### Cleaning:

Standard workshop cleaners are suitable.

#### Storage:

Frost is not a problem. Consistently high temperatures reduce the shelf life.

After the shelf life date (label under the can) is exceeded, the material may have become slightly thicker over time (and should be slightly thinned) and must be carefully stirred, and the drying time may increase. The material must no longer be used once the material is inhomogeneous after stirring.

If a film forms, remove the film; do not stir it in.

#### Technical Data:

Solid content:	Approximately 70 % (weight)
Odor:	Aromatic odor
VOC:	Less than 400 g (14.1 oz)/l
Free of lead, chromates, zinc, aromatics/xylene; satin gloss	
Dust dry*)	20 to 30 minutes
Firm coating *)	1 to 2 hours
Dried *)	8 hours
Hardened*)	3 days



\*) These values are very heavily dependent on layer thickness, and marginally dependent on temperature. Air circulation is helpful; using heat has the opposite effect.

### 3.13 Stone Chip Protection

⇒ **"3.13.1 Stone Chip Protection AKR 311 KD1 05", page 284**

⇒ **"3.13.2 Stone Chip Protection AKR 311 KD1 10", page 285**

#### 3.13.1 Stone Chip Protection - AKR 311 KD1 05-

##### Definition:

- ◆ Stone Chip Protection - AKR 311 KD1 05-, black

Edition 04/2009

##### Product Description

Stone Chip Protection - AKR 311 KD1 05- is a finely atomizing coating material with a synthetic resin base.

The dried film adheres very well to cleaned base surfaces as well as to an bare and painted panel.

It is characterized by a high covering capacity, good protection against corrosion, high resistance to abrasion and therefore good protection against stone impacts.

After approximately seven minutes the quick-drying stone chip protection spray can be painted over using commercially available vehicle paint systems.

Oven drying at approximately 60 °C (140 °F) is possible without any problems.

Extraordinary mechanical stress (for example, automatic car washes) should be avoided in the first few weeks.

The mechanical load-bearing capacity of the painted surfaces can be found in the manufacturer's product specifications.

##### Application Instructions

##### Application

- ◆ Stone Chip Protection - AKR 311 KD1 05- is used on visible components, such as front and rear aprons and door sills to protect against stone impact, grit, and moisture corrosion. It can be quickly painted over.
- ◆ The material is also used to supplement stone chip protection linings, for work on particular points of a vehicle and during accident repair work.



##### Note

- ◆ *Before starting to apply, it is necessary to read the safety measures and advice in the safety data sheet.*
- ◆ *Even for products which are not required to be labeled by law, the usual safety measures must be observed for chemical emissions.*

##### Processing

- ◆ Clean the surfaces to be treated with Stone Chip Protection well beforehand and remove any rust.



- ◆ The surfaces must be dry, free of grease, dirt and as much dust as possible.
- ◆ The material should be at room temperature during application.
- ◆ Shake the can thoroughly; when the ball bearings start to rattle, continue shaking for approximately one minute.
- ◆ Hold the can vertically when spraying and spray from a distance of 20 to 30 cm.
- ◆ If parts of the vehicle were covered before spraying, the covers should be removed before drying.
- ◆ Abrasion and corrosion protection increases with the layer thickness. For this reason one or two additional coats should be applied after a short flash-off time.
- ◆ To prevent spraying shadows the material is sprayed on in cross patterns.
- ◆ After use, the can and the valve should be held down and the valve sprayed until only propellant gas emerges.



#### Caution

***Do not spray onto moving or high-temperature components such as the steering, engine, transmission, drive axle, exhaust, catalytic converter and brake system.***

#### Cleaning

- ◆ Splashes and paint mist can be removed immediately with gasoline.
- ◆ Dried material can only be removed with D or R thinner. Be careful with fresh paint!

#### Technical Data

Color	Bright/black
Odor	Solvent
Thickness after 2 to 3 cross spray applications	250-300 µm dry film
Drying time	Dust dry after approximately two hours
Processing temperature	+15 °C to +25 °C (59 °F to 77 °F)
Application temperature	-29 °C to +70 °C (-20.2 °F to 158 °F) (short-term, up to one hour at +100 °C (212 °F))

### 3.13.2 Stone Chip Protection - AKR 311 KD1 10-

#### Definition:

- ◆ Stone Chip Protection - AKR 311 KD1 10- , black

Edition 02/2014

#### Product Description

Stone Chip Protection - AKR 311 KD1 10- (black) is a water-soluble stone chip protection.

Characteristics:



- ◆ High elasticity
- ◆ Can be painted over with all top coats
- ◆ Particularly suitable for parts of passenger and work vehicles which are subject to gravel impact, such as front sections and door sill panels.

### Application Instructions

#### Base surface

Suitable base surfaces:

- ◆ Well sanded factory paint or old paint (including thermoplastic coatings)
- ◆ Surfaces treated with primer or filler



#### Caution

***The Stone Chip Protection - AKR 311 KD1 10- may not be applied to PVB (acid-hardening) adhesive primers.***

Pre-treatment of base surfaces:

- Carefully clean using Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .

- Then, sand.

- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.



P00-10038



P00-10037



P00-10038



## Processing

### Spray device:

- Underbody spray gun with thread for disposable cans.



P00-10035

- If a finer surface is desired, the Stone Chip Protection - AKR 311 KD1 10- can be applied with a pressure feed spray gun according to the appropriate thinning.

### Thinner:

- Can be thinned with Purified Water LVW 010 000 A5-



P00-10029

### “High-Pressure Spraying” application type



P00-10035

- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211
- Set spray nozzle (see manufacturer's information) to 3 to 4 bar (43.51 to 58.02 psi).



### Note

*Do not dilute during the high-pressure spraying procedure. The delivery viscosity is the same as the application viscosity.*



P00-10036



Application type "coat"



P00-10032

Application viscosity 4 mm gravity feed spray gun "Compliant":

- Depending on the addition of Purified Water - LVW 010 000 A5-



P00-10036

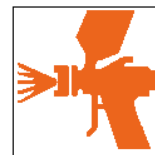
Adding 10 % thinner at +20 °C (68 °F) material temperature.

- Use a measuring stick to mix when pouring in the thinner.



P00-10023

- Set spray nozzle (see manufacturer's information): "Compliant" 1.5 to 2.0 mm.
- Set the spray pressure (see manufacturer's information): "Compliant" to 2.0 to 2.5 bar (29.01 to 36.26 psi).



P00-10029



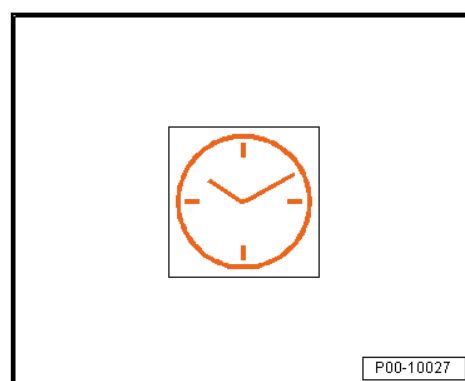
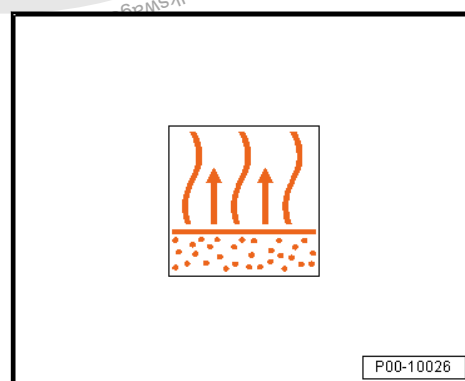
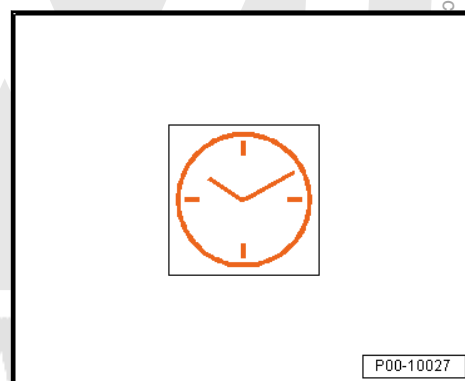
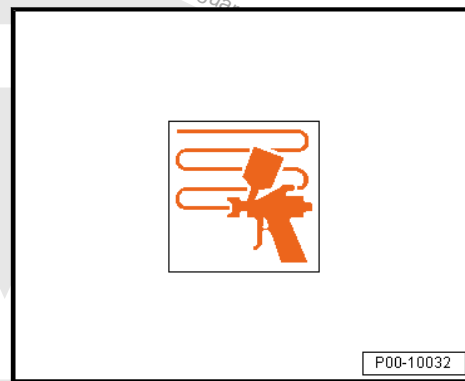
- Apply two to three spray applications.
- The recommended dry layer thickness is between 150 and 300 µm.

### Drying

Air dry at +20 °C (68 °F) room temperature for 2 to 2.5 hours to 150 µm and overnight to 300 µm

Final flash-off time with forced drying is a minimum of 35 to 40 minutes.

Forced drying at +60 °C (140 °F) object temperature for 30 minutes to 150 and 300 µm





## Reworking

Can be painted over with:

- ◆ Water-based base paint and two-part HS clear coat
- ◆ Two-Part HS Top Coat

## Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

## Characteristics

Delivery Viscosity	Thixotropic
Flashpoint:	Flame-resistant
VOC value: 2004/42/II B (e) (840) 130	The EU limit for this product (product category IIB.e) in ready-to-use form is a maximum of 840 g (29.6 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 130 g (4.6 oz)/L.

## Storage

The guaranteed shelf life of 48 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).

## Storage Conditions

The prescribed storage temperature is +20 °C (68 °F) (not to fall below +5 °C (41 °F)).



P00-10029



P00-10820



P00-10050



P00-10048



## 3.14 Wax Underbody Protection

⇒ ["3.14.1 Wax Underbody Protection D 316 D38 A2", page 291](#)

⇒ ["3.14.2 Wax Underbody Protection D 316 000 A1", page 293](#)

⇒ ["3.14.3 Wax Spray D 322 100 M2", page 294](#)

### 3.14.1 Wax Underbody Protection - D 316 D38 A2-

#### Definition:

- ◆ Wax Underbody Protection - D 316 D38 A2-

Edition 04/2009

#### Product Description

Wax Underbody Protection - D 316 D38 A2- is an solvent-containing anti-corrosion agent based on wax and lanolin with polymer and rust-protection additives.

This results in a high viscosity and a relatively high abrasion resistance for wax.

The material seeps into the pores of the PVC coating, pushing out moisture and closing the pores to produce a waterproof, highly adhesive and firm coating.

After drying, it forms a light beige, transparent, non-sticking, waterproof film.

Its transparency enables the product to conform to German technical standards (TUV) (the underbody can be monitored).

The dry film has good adhesion and corrosion protection properties and is very durable due to its toughness and resistancy.

#### Wax Underbody Protection - D 316 D38 A2- technical application information

#### Application

- ◆ The material is primarily used on the underbody and especially for treatment and maintenance of all protective coats such as PVC, PVC/wax/bitumen/rubber/resin based materials.
- ◆ It can also be used to treat chassis parts such as axles, wheel suspensions and springs. These parts become gray with age and are often the first to be affected by rust. The treatment refreshes the color which considerably improves the optical appearance. At the same time the parts are protected against corrosion.



#### Note

- ◆ *Before starting to apply, it is necessary to read the safety measures and advice in the safety data sheet.*
- ◆ *Even for products which are not required to be labeled by law, the usual safety measures must be observed for chemical emissions.*

#### Processing

- ◆ Clean the surfaces to be treated with Wax Underbody Protection well beforehand and remove any rust.



- ◆ The surfaces must be dry, free of grease, dirt and as much dust as possible.
- ◆ The Wax Underbody Protection must only be applied to dry surfaces. Rust must be taken into account for older vehicles.
- ◆ Rust should be removed with a wire brush.
- ◆ Before work can start the vehicle should be covered, especially the door windows.
- ◆ The Wax Underbody Protection can be applied to a vertical surfaces in one step. To prevent a spraying shadow, it is advisable to spray with cross coats.
- ◆ After drying over night the vehicle can be used again. Between 24 and 48 hours are required for final drying.
- ◆ An underbody spray gun is used when applying with the 1 L can. The can should be shaken before use.
- ◆ Recommended wet film thickness 200 µm, processing air pressure approximately 3 to 5 bar (43.51 to 72.52 psi).
- ◆ The Wax Underbody Protection can also be used with a pressure feed spray gun if the Venturi hooked probe (16139 SATA) is used. The application pressure is approximately 3 to 4 bar (43.51 to 58.02 psi). A 750 mm flexible guide hose enables the operator to guide the hook with the 7 mm Venturi nozzle with ease.



#### Caution

***Do not spray onto the steering, engine, drive axle, exhaust, catalytic converter and brake systems.***

***Blow out the spray gun immediately after use and then rinse it with Plastic Cleaner - D 195 850 A1- .***

***If the spray gun becomes blocked the can may burst!***

***Observe the operating instructions of the UBS spray gun!***

#### Cleaning

- ◆ Splashes and spray mist should be removed immediately using Plastic Cleaner - D 195 850 A1- . Material residue can also be cleaned off easily with mineral spirits or kerosene.
- ◆ Larger surfaces can also be cleaned with a steam cleaner.
- ◆ For this reason an underbody that has been treated with Wax Underbody Protection cannot be cleaned with steam cleaning devices unless it is to remove the old layer before new treatment can begin.

#### Technical Data

Color	Transparent light beige
Odor	Mild odor
Solid matter content	Approximately 47 %
Consistency	Fluid, lightly thixotropic
Heat resistance of the dry film	Greater than 100 °C (212 °F)
Complete drying	24 to 48 hours





Processing temperature	+10 °C to +25 °C (50 °F to 77 °F)
Application temperature	-25 °C to +80 °C (-13 °F to 176 °F) (short-term, up to one hour at +100 °C (212 °F))

### 3.14.2 Wax Underbody Protection - D 316 000 A1-

#### Definition:

- ◆ Wax Underbody Protection - D 316 000 A1-

Edition 01/2008

#### Product Description

Wax Underbody Protection - D 316 000 A1- is an exceptional long-term corrosion protection.

The Wax Underbody Protection is based on a solvent-free, oxidative drying system and provides optimal corrosion protection for the body underbody area.

This long-term corrosion protection is established by its excellent adhesion at both very low and high temperatures to the metallic surface.

The product forms a light brown, elastic and non-tacky coating.

It is not necessary to combine the film at an elevated temperature.

#### Wax Underbody Protection - D 316 000 A1- technical application information

##### Application

- ◆ The material is primarily used in the vehicle area.
- ◆ Make sure that the base surfaces are dry.
- ◆ The ready-made product is applied using brushes at the material temperature of 20 to 35 °C (68 to 95 °F).
- ◆ The material can be carefully warmed up to 45 °C (113 °F) immediately before applying (less than 5 minutes) if it is required by the application technique.
- ◆ The oxidative hardening product can form a film on the surface after a short time. This has no impact on the corrosion protection or other properties.

##### Properties

- ◆ Solvent-free
- ◆ 100% active ingredient content
- ◆ Exceptional long-term corrosion protection
- ◆ Good adhesion properties
- ◆ Reduced tendency to drip
- ◆ Low-temperature flexibility
- ◆ Long shelf life



## Note

- ◆ *Before starting to apply, it is necessary to read the safety measures and advice in the safety data sheet.*
- ◆ *Even for products which are not required to be labeled by law, the usual safety measures must be observed for chemical emissions.*

## Processing

- ◆ The surfaces that are to be treated must dry and be free of grease and dust.
- ◆ Bring the Wax Underbody Protection to the application temperature of 20 to 35 °C (68 to 95 °F).
- ◆ Apply the material to the body parts that are to be protected and spread using brushes.

## Technical Data

Basic	Mixture of corrosion protection additives with a sulfonate base, alkyd, mineral oil aromatic extracts, pigments, thickening agents, drying agents and fluorescent pigments.
Delivery form/color	Light brown, viscous fluid
Rheomat viscosity	1850 ± 350 mPa $\cdot$ s (System PP50, d= 760 1/s)
Density/15 °C (59 °F) DIN EN ISO 12185	0.995 ± 0.015 g (0 ± 0 oz)/ml
Solid matter content	99 ± 1 %
Flashpoint DIN EN ISO 2719	Approximately 150 °C (302 °F)
Recommended layer thickness	100-400 $\mu$ m
Processing temperature	+20 °C to +35 °C (68 °F to 95 °F)
Storage	At temperatures of +10 °C to +30 °C (50 °F to 86 °F) for approximately 12 months
Container	310 ml

### 3.14.3 Wax Spray - D 322 100 M2-

#### Definition:

- ◆ Wax Spray - D 322 100 M2-

Edition 01/2011

#### Product Description

Wax Spray - D 322 100 M2- is a long-term anti-corrosion agent. After drying, the product forms a light brown, wax-like film. Because of its hardness, the Wax Spray provides good protection against mechanical stress.



## Wax Spray - D 322 100 M2- technical application information

### Application

- ◆ The material is primarily used in the vehicle area, but it is also used as temporary corrosion protection for tools and machines.
- ◆ The Wax Spray does not corrode vehicle paint and adheres to almost all base surfaces.



### Note

- ◆ *Before starting to apply, it is necessary to read the safety measures and advice in the safety data sheet.*
- ◆ *Even for products which are not required to be labeled by law, the usual safety measures must be observed for chemical emissions.*

### Processing

- ◆ Bring the Wax Spray to room temperature (16 to 20 °C (60.8 to 68 °F)).
- ◆ Briefly shake the spray can before using.
- ◆ The surfaces that are to be treated (underbodies, wheel housings, insides of door) must dry and be free of grease and dust.
- ◆ The Wax Spray is sprayed on evenly in cross coats at a distance of 20 to 30 cm.



### Caution

***Do not spray onto the steering, engine, drive axle, exhaust, catalytic converter and brake systems.***

### Technical Data

Basic	Wax mixture
Color	Light brown/transparent
Film type	Hard and wax-like
Density	0.735 g (0 oz)/cm <sup>3</sup>
Solids content	35.4 %
Flashpoint/ Active agent	29 °C (84.2 °F)
Flashpoint/ Spray	Less than -20
Recommended layer thickness	50 µm/wet
Drying time	Approximately 30 minutes
Heat stability	105 °C (221 °F)
Removability	Mineral spirits
Processing temperature	+16 °C to +20 °C (60.8 °F to 68 °F)
Propellant gas (Aerosol)	Propane / Butane
Aerosol storage	Cool and dry, less than 50 °C





Hazard warn- ing	Highly flammable
Container	500 ml

### 3.15 Sealing Materials

⇒ ["3.15.1 Polyurethane Adhesive Sealant", page 296](#)

⇒ ["3.15.2 Sprayable Sealant", page 298](#)

⇒ ["3.15.3 Adhesive/Sealant", page 301](#)

#### 3.15.1 Polyurethane Adhesive Sealant

##### Definition:

◆ Polyurethane Adhesive - AKD 476 KD5 05-

Edition 04/2009

##### Product Description

Polyurethane Adhesive Sealant - AKD 476 KD5 05- is a paste-like, one-part adhesive sealant with a polyurethane base, which forms a rubbery/elastic material when it hardens.

The film formation and hardening time depends on the humidity and temperature. The hardening time is also affected by the joint depth.

These times can be shortened by raising the temperature and humidity. Lower temperature and humidity levels delay the hardening.

##### Characteristics:

- ◆ Can be painted over, even "wet-in-wet"
- ◆ Very fast drying
- ◆ Levels out slightly on the surface
- ◆ Excellent elasticity
- ◆ High resistance to aging
- ◆ Can be sanded
- ◆ Can be spread

##### Application Instructions

##### Application

- ◆ Polyurethane Adhesive Sealant - AKD 476 KD5 05- is used for elastic sealing/adhesion, especially for sealing welds and sealing very narrow joints where its lack of stability is of no consequence in the following areas: body and vehicle assembly as well as vehicle add-ons, especially if the sealant is to be painted. To avoid yellowing or cracking, the material should always be painted over when used on the outside seams.
- ◆ The use of Polyurethane Adhesive Sealant - AKD 476 KD5 05- means that mechanical securing methods such as bolting, welding and clamping can be partially omitted. Until the sealing/adhesive has hardened, the parts should be temporarily fixed in position with adhesive tapes and spacers.
- ◆ The Polyurethane Adhesive Sealant - AKD 476 KD5 05- has the major advantage of being both an adhesive and a sealant.
- ◆ The material is suitable only to a limited extent for some adhesive purposes in vehicle construction.





## Adhesive Characteristics

- ◆ The Polyurethane Adhesive Sealant - AKD 476 KD5 05- provides good adhesion without glass-/paint primer on primed and painted bodywork, on wood (untreated, glazed and painted), some plastics such as PBTP, polyurethane hard foam and GF polyester.
- ◆ Depending on the base surface it may be necessary to use a glass-/paint primer as a bonding agent to achieve an optimum adhesion.
- ◆ On account of the large number of primers, paints and differing plastic surfaces etc., it is recommended to conduct an application-specific test beforehand.
- ◆ Careful cleaning on plastic and metal surfaces with a suitable solvent often results in significantly better adhesion.



### Note

- ◆ *Before starting to apply, it is necessary to read the safety measures and advice in the safety data sheet.*
- ◆ *Even for products which are not required to be labeled by law, the usual safety measures must be observed for chemical emissions.*

## Processing



### Note

*Body areas and adhesion surfaces that are to be sealed must be insulated with a Two-Part Filler before applying the material.*

- ◆ The adhesion surfaces must be dry, free of oil, dust, grease and any other impurities. Cleaners A, D and Plastic Cleaner - D 195 850 A1- are suitable for cleaning.
- ◆ The application of Polyurethane Adhesive Sealant - AKD 476 KD5 05- from a 310 ml nozzle cartridge is done with manual or compressed air guns. The 310 mL foil cartridges are used with the Cartridge Gun - V.A.G 1628- or the Pneumatic Cartridge Gun - V.A.G 1761/1-. A pressure of 2 to 5 bar (29.01 to 72.52 psi) is required for compressed air application.
- ◆ Low material temperatures of the sealant increase its viscosity. This results in a lower spraying rate. To prevent this the sealant should be brought to the correct temperature in the appropriate manner before processing begins.
- ◆ If the base surface is too cold, condensation can form if the temperature is lower than the dew point. This should be avoided by heating the base surface beforehand.
- ◆ After processing, the Polyurethane Adhesive Sealant - AKD 476 KD5 05- can be smoothed with a jointer or a spatula, which have been moistened with low surface tension water. If the edges of the joint are masked with tape, simply pull off the tape with a spatula.
- ◆ It is recommended to use cleaner D to remove any unhardened adhesive sealing material from the tools.

## Painting procedure

- ◆ The Polyurethane Adhesive Sealant - AKD 476 KD5 05- can be painted over using the "wet-in-wet" process with one-part



and two-part repair paint with an alkyd resin-acrylic base as well as with all original repair paints.

- ◆ Nitro repair paints out of a spray can and paints, paint thinners and catalysts with alcohol content are not compatible with the adhesive sealing material (no hardening)
- ◆ Corrosion protection primers may only be applied to hardened material as they are strongly hindered in most cases by steam diffusion.
- ◆ If drying is accelerated by the use of a drying oven or an IR dryer radiator, a pre-reaction/waiting time of at least 30 minutes must be adhered to. Only then is the painted over adhesive sealing material to be warmed. The maximum permissible temperature for non-hardened material is +90 °C (194 °F) for one hour.

#### Incompatibility

- ◆ Polyurethane Adhesive Sealant - AKD 476 KD5 05- does not adhere to sealants that have a MS polymer and silane-modified polymer base.
- ◆ On the other hand, if the hardened Polyurethane Adhesive Sealant - AKD 476 KD5 05- is processed on MS-polymer and silane-modified polymer base, then there is good adhesion.

#### Technical Data

Color	White, gray, black
Odor	Classified by aroma (odorless in hardened condition)
Consistency	Paste-like, can be applied with brush or spatula
Stability	Levels out slightly on the surface
Film formation type (standard climate conditions DIN 50014)	15 to 45 minutes, at +23 °C (73.4 °F) and a relative humidity of 50 %
Hardening speed (standard climate conditions DIN 50014)	Approximately 5.5 mm/ 24 hours, at +23 °C (73.4 °F) and a relative humidity of 50 %
Volume change	approximately -6 %
Processing temperature	+5 °C to +35 °C (41 °F to 95 °F)
Application temperature	-40 °C to +70 °C (-40 °F to 158 °F) (limited: 24 hours at +80 °C (176 °F), short-term: 1 hour at +120 °C (248 °F))

### 3.15.2 Sprayable Sealant

#### Definition:

- ◆ Sprayable Sealant - D 476 KD1 M2- , gray
- ◆ Sprayable Sealant - D 476 KD2 M2- , black

**Edition 08/2012**

#### Product Description

Sprayable Sealant - D 476 KD1 M2- / -D 476 KD2 M2- is a spray-on sealant with a MS polymer base. It hardens into a rub-



ber-elastic material with good abrasion resistance by absorbing atmospheric moisture.

The film formation and hardening time depends on the humidity and temperature. The hardening time is also affected by the layer thickness.

These times can be shortened by raising the temperature and humidity. Lower temperature and humidity levels delay the hardening.

#### Characteristics:

- ◆ Sealant and seam sealant in one product
- ◆ High stability
- ◆ Can be sprayed and brushed
- ◆ Can be painted over with conventional or water-based paints up to three days after applying
- ◆ Adheres to many materials without glass-/paint primer
- ◆ High initial strength
- ◆ Can be spot welded
- ◆ Silicone-free
- ◆ No strong odor
- ◆ Isocyanate-free
- ◆ Quick drying
- ◆ UV resistant
- ◆ High resistance to aging
- ◆ Sound-dampening properties

#### Application Instructions

##### Application

- ◆ Sprayable Sealant - D 476 KD1 M2- / -D 476 KD2 M2- is used to seal welds during vehicle repair on vehicles that have been sprayed at the factory, for example in the engine, luggage, and passenger compartment areas. Application tools (telescope spray gun or Pneumatic Cartridge Gun - V.A.G 1761/1- ) can be used to reach every desired weld.
- ◆ The material is used as a surface coating to repair or supplement PVC underbody coating or stone chip protection.

##### Pretreatment

- ◆ The adhesion surfaces must be dry, free of oil, dust, grease and any other impurities. Cleaner FL is suitable to clean with.
- ◆ Adhesion is improved if the contact surfaces are roughened with a sanding pad.
- ◆ If the material is painted over after completely drying, then the painting preparatory work similar to the plastic preparatory work is to be followed.



#### Note

- ◆ *Before starting to apply, it is necessary to read the safety measures and advice in the safety data sheet.*
- ◆ *Even for products which are not required to be labeled by law, the usual safety measures must be observed for chemical emissions.*

#### Processing



#### Note

*Body areas and adhesion surfaces that are to be sealed must be insulated with a Two-Part Filler before applying the material.*

- ◆ Applying Sprayable Sealant - D 476 KD1 M2- / -D 476 KD2 M2- from 310 mL aluminum cartridges can only be performed with the telescope spray gun or Pneumatic Cartridge Gun - V.A.G 1761/1- . These application devices make it possible to apply the material as a strip of material (sealant bead) or to spray it on by using the dual-circuit air system.
- ◆ The material can be both sprayed and brushed on. This means that it is possible to imitate textured bonds and brushed structures.
- ◆ The sealed seams can be painted over as early as 15 to 30 minutes.
- ◆ The corresponding settings on the application devices enable the operator to imitate all textures specified by the manufacturer quickly and conveniently. The spraying distance can be used to vary the width and limit of the bond. Refer to the operating instructions for details on handling and setting the spray gun.
- ◆ It is recommended to remove any unhardened sealant from the tools using cleaner FL. Hardened material can only be removed mechanically.

#### Painting procedure

- ◆ The Sprayable Sealant - D 476 KD1 M2- / -D 476 KD2 M2- can be painted over with one-part and two-part repair paint and even those containing alcohol as a solvent.
- ◆ Painting over quickly does not prevent complete hardening, it is, however, delayed. Do not wait longer than three days before painting.
- ◆ Before sealing or coating, phosphate and epoxy resin primers are particularly suitable for corrosion protection. It is imperative that the primers are dry before it is applied.
- ◆ If the body area to be painted after an accident repair is still to be coated with filler, filler primer or spray-on filler, these materials must be applied before sealing or coating with Sprayable Sealant - D 476 KD1 M2- / -D 476 KD2 M2- .
- ◆ If a filler still needs to be applied after sealing or coating with Sprayable Sealant - D 476 KD1 M2- / -D 476 KD2 M2- , then the sealant should be at least six hours old and a filler suitable for coating plastic is used.

#### Incompatibility

- ◆ The Sprayable Sealant - D 476 KD1 M2- / -D 476 KD2 M2- is not compatible with fresh one-part polyurethane material.



Polyurethane products must be solidified before they are sprayed with the sealant.

- ◆ The material should not be treated with aromatic solvent systems. As a result, it can partially dissolve or swell the sealant.

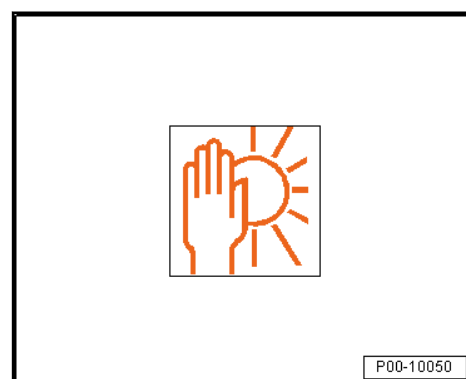
#### Technical Data

Color	Gray, black
Odor	Barely perceptible
Consistency	Pasty
Density	Approximately 1.6 g (0.1 oz)/cm <sup>3</sup>
Stability	Excellent
Hardening type	Moist hardening
Film formation type (standard climate conditions DIN 50014)	8 to 20 minutes, at +23 °C (73.4 °F) and a relative humidity of 50 %
Drying (standard climate conditions DIN 50014)	Approximately 4 mm/ 24 hours and 6 mm/ 48 hours at +23 °C (73.4 °F) with a relative humidity of 50 %
Shore A hardness	Approximately 65
Painting compatibility	Can be painted after 20 minutes with one-part and two-part paints
Adhesive properties	Bare sheet metal, galvanized metal, EC paint, top coat paint, metallic paint, PVC underbody protective agent, GFK, PP/EPDM (testing recommended)
Chemical resistance	Resistant to light and weather, PVC softening agents and fuel (short-term)
Processing temperature	+5 °C to +35 °C (41 °F to 95 °F)
Application temperature	-40 °C to +90 °C (-40 °F to 194 °F) (short-term, up to one hour at +130 °C (266 °F))

#### Storage

The material is not vulnerable to frost.

The guaranteed shelf life is 12 months from the production date. Use no later than the date indicated on the label and store in original container at +10 °C to +25 °C (50 °F to 77 °F).



### 3.15.3 Adhesive/Sealant

#### Definition:

- ◆ Adhesive/Sealant - D 511 500 A2- , gray
- ◆ Adhesive/Sealant - D 511 510 A2- , black



## Edition 04/2009

### Product Description

Adhesive/Sealant - D 511 500 A2- / -D 511 510 A2- is used in vehicle repair to protect the bodywork repairs against corrosion, as a quick-hardening sealant for all visible and invisible seams and dents and also to patch up PVC sealed welds.

The Adhesive/Sealant is highly suitable as a sealant in spot welding between spot welded flanges to prevent corrosion.

#### Characteristics:

- ◆ High adhesive properties on primed and painted metal, galvanized surfaces, aluminum, wood, glass and all conventional plastics used in vehicles.
- ◆ Can be painted immediately
- ◆ Can be dried with an IR dryer
- ◆ Dries quickly under the paint
- ◆ Does not form bubbles
- ◆ No contact-corrosion on zinc or aluminum
- ◆ Exceptional corrosion protection
- ◆ Solvent-free and contains no isocyanate and PVC
- ◆ Very good UV- and aging resistance

### Application Instructions

#### Application

- ◆ Adhesive/Sealant - D 511 500 A2- / -D 511 510 A2- is used to seal welds in vehicle repair.

#### Pretreatment

- ◆ The adhesion surfaces must be dry, free of oil, dust, grease and any other impurities.
- ◆ Adhesion is improved if the contact surfaces are roughened with a sanding pad.



#### Note

- ◆ *Before starting to apply, it is necessary to read the safety measures and advice in the safety data sheet.*
- ◆ *Even for products which are not required to be labeled by law, the usual safety measures must be observed for chemical emissions.*

### Processing



#### Note

*Body areas and adhesion surfaces that are to be sealed must be insulated with a Two-Part Filler before applying the material.*

- ◆ Adhesive/Sealant - D 511 500 A2- / -D 511 510 A2- is applied to seal welds and impacts using the Pneumatic Cartridge Gun - V.A.G 1764/1- , or the Cartridge Gun - V.A.G 1628- . Then, depending on its appearance, it is to be left as a sealant bead or evened with a brush or spatula (observe the hardening time less than 10 minutes). After a film has





formed, the material can still be smoothed further with a moist spatula.

- ◆ The Adhesive/Sealant can be painted over with all repair paints. Painting must occur within 48 hours of the sealant being applied. Drying the paint with an infra-red dryer does not hinder the hardening of the sealant.
- ◆ If the Adhesive/Sealant is used as a sealant during spot welding, then a sealant bead (2 to 3 mm diameter) is to be applied to the flange before the repair part is attached. The repair part should be spot-welded before a sealant film forms (less than 10 minutes)
- ◆ The material can be spot-welded within 30 minutes. After welding, the sealant that has emerged can be smoothed.

#### Incompatibility

- ◆ Never apply any sealants with a MS polymer and silane-modified polymer base to an unhardened polyurethane adhesive sealant. The polyurethane adhesive/sealant will not adhere properly or only partially.
- ◆ However, a hardened polyurethane adhesive/sealant adheres well to fresh, spray-on sealants with a MS polymer and silane-modified polymer base.

#### Technical Data

Color	Gray, black
Basic	Silane-modified polymer (SMP)
Volume difference after hardening	- 3 %
Film formation	± 20 minutes
Adhesion-free	Four hours at +20 °C (68 °F)
Hardening speed	3 to 4 mm/4 h at +20 °C (68 °F)
Solvent content	0 %
Isocyanate content	0 %
Temperature resistance	-40 °C to +120 °C (-40 °F to 248 °F) (short-term, up to maximum 30 minutes at +180 °C (356 °F))
Processing temperature	+5 °C to +35 °C (41 °F to 95 °F)
UV and weather resistance	Excellent



## Storage

The guaranteed shelf life of 18 months from date of manufacture. Use no later than the date indicated on the label and store in original container at +5 °C to +30 °C (41 °F to 86 °F).



P00-10050

## 3.16 Cleaning Agent

⇒ ["3.16.1 Pre-Treatment Towel", page 304](#)

⇒ ["3.16.2 Silicone Remover", page 305](#)

⇒ ["3.16.3 Plastic Cleaner", page 307](#)

⇒ ["3.16.4 Antistatic Plastic Cleaner", page 308](#)

⇒ ["3.16.5 Industrial Dirt Remover", page 309](#)

### 3.16.1 Pre-Treatment Towel

#### Definition:

- ◆ Pre-Treatment Towel - D 043 100 M5-

#### Product Description:

Pre-treatment towels D 043 100 M5 for uncoated metal, especially before using two-part HS speed filler LVM 016 ... A2/A4. Pre-treatment towels contain special, reactive substances. Pre-treatment towels are easy to use and were developed to quickly pre-treat metal surfaces. They ensure excellent adhesion during the subsequent painting process and offer good corrosion protection.

#### Application areas:

- ◆ Suitable for smaller sanded-through areas.
- ◆ Quick and easy application.
- ◆ Has excellent adhesion and corrosion protection properties.
- ◆ Easy to apply. No other devices are required.
- ◆ Excellent yield. One towel can be used to pre-treat approximately 2 m<sup>2</sup>.
- ◆ Reduces the flash-off times by about 20 to 25 minutes compared to two-part wash primer.
- ◆ Chromate-free, water-based and easy to dispose of, with very low amount of solvents, less than 1.5%.

#### Application instructions:

- ◆ Protect pre-treatment towels D 043 100 M5 from freezing. If towels are frozen, they will be damaged and cannot be used any longer.
- ◆ Wearing appropriate personal protective equipment during application is recommended: in addition to occupational protective clothing and safety goggles, rubber gloves are especially important.
- ◆ Painting over this product with a one-part primer, wash primer or polyester products is not recommended.

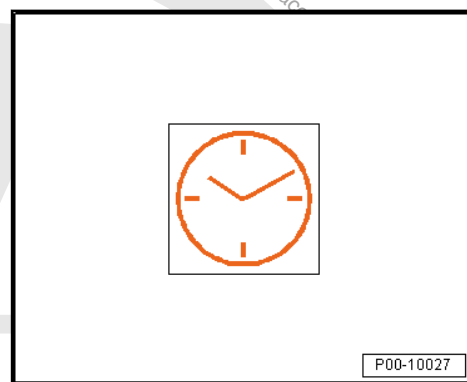
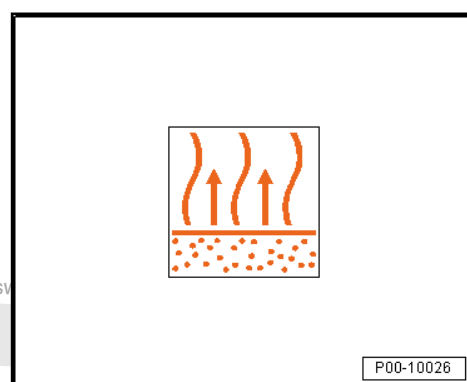




- ◆ Containers with towels in them must be sealed immediately after removing a fresh towel.
- ◆ For continued use, towels can be stored in a sealable plastic bag or container for a maximum of one working day. Used towels must not be placed back in the original container.
- ◆ Bare steel panel, sanded and cleaned.
- ◆ Galvanized steel panels or soft aluminum, sanded and cleaned.
- ◆ Make sure that the surface remains damp for at least one minute. Required to achieve an effective passivation of the metal.
- ◆ Only apply to bare metal surfaces.
- ◆ Do not use the same towel for different types of metal surfaces.

The surface must be dry.

Paint over within 15 minutes.



### 3.16.2 Silicone Remover

#### Definition:

- ◆ Silicone Remover - LSW 019 000 A5- , watery
- ◆ Silicone Remover - LVM 020 000 A5-
- ◆ Silicone Remover, Long - LVM 020 100 A5-

Edition 02/2012

#### Silicone Remover - LSW 019 000 A5- product description

Silicone Remover - LSW 019 000 A5- is an unlabeled, watery cleaning agent that has a low concentration of organic solvents and special cleaning additives.

#### Silicone Remover - LVM 020 000 A5- and Silicone Remover, Long - LVM 020 100 A5- product description

Silicone Remover - LVM 020 000 A5- is a fast-evaporating mixture. Silicone Remover, Long - LVM 020 100 A5- is a mixture



made of slow-evaporating organic solvents. Both are primarily used to remove any oil and grease residue.

### Application Instructions

#### Application

- ◆ Before reworking the area of application further, clean sanded old or factory paint, primed, filled and sanded areas.

#### Processing

- ◆ Apply Silicone Remover with a spray bottle or a clean fleece cloth.
- ◆ Dry the surface with a dry fleece cloth before the Silicone Remover evaporates.
- ◆ Let all cleaned surfaces dry before further processing or allow them to dry.



#### Note

- ◆ *Allow the cleaned surface to dry completely before further processing.*
- ◆ *Do not allow the sprayed-on Silicone Remover to dry on the surface.*
- ◆ *This product is not suitable for cleaning spray guns and equipment.*
- ◆ *Replace a used or dirty fleece cloth when appropriate (always use a clean fleece cloth).*
- ◆ *Repeat the cleaning procedure if the surface is very dirty.*
- ◆ *Silicone Remover - LSW 019 000 A5 - is not suitable for removing separating agent residue on UP-GF or other plastic surfaces.*



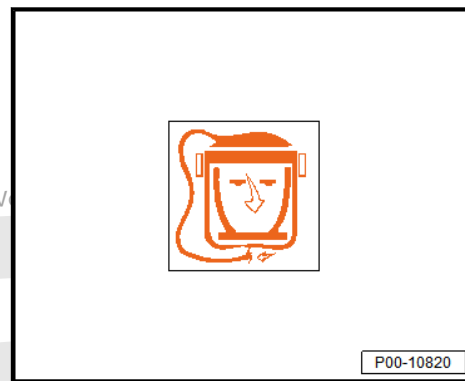


#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

#### Silicone Remover - LSW 019 000 A5- characteristics

Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/IIB (a) (200) 200	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 200 g (7.1 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 200 g (7.1 oz)/L.



#### Silicone Remover - LVM 020 000 A5- characteristics

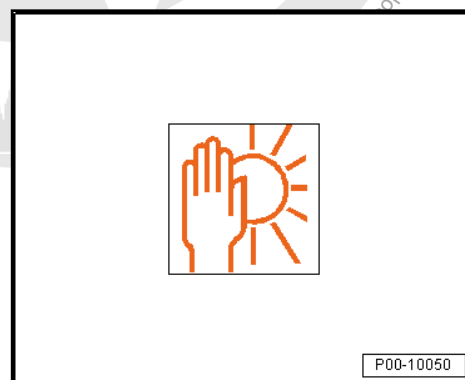
Flashpoint:	Above +4 °C (39.2 °F)
VOC value: 2004/42/IIB (a) (850) 770	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 850 g (30 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 750 g (26.5 oz)/L.

#### Silicone Remover, Long - LVM 020 100 A5- characteristics

Flashpoint:	Above +26 °C (78.8 °F)
VOC value: 2004/42/IIB (a) (850) 770	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 850 g (30 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 770 g (27.2 oz)/L.

#### Storage

The guaranteed shelf life of 60 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



### 3.16.3 Plastic Cleaner

#### Definition:

- ◆ Plastic Cleaner - D 195 850 A1-

Edition 04/2009

#### Product Description

Plastic Cleaner - D 195 850 A1- is a liquid universal cleaner and thinner with an non-aromatic, low n-hexane content gasoline base. The product contains no chlorinated hydrocarbons, and does not corrode the paint if briefly contacted.

#### Application Instructions

##### Application

- ◆ The Plastic Cleaner - D 195 850 A1- is mostly used to degrease and clean base surfaces before the application of adhesives or sealants.



- ◆ Careful cleaning of the adhesion surfaces is essential for proper adhesion and includes the removal of dust, oil and grease.
- ◆ Depending on the composition of the products listed above, the cleaner can also be used to remove impurities and surplus amounts of these materials as well as being used on various base surface protection materials.
- ◆ In some cases, the Plastic Cleaner - D 195 850 A1- is also suitable for use as a thinner for certain adhesives/sealants as coating compounds. It should be remembered that these products are normally used undiluted. Thinning is only suitable in some special processes or if a thinner consistency is desired.

## Processing



### Note

- ◆ *Before starting to apply, it is necessary to read the safety measures and advice in the safety data sheet.*
- ◆ *Even for products which are not required to be labeled by law, the usual safety measures must be observed for chemical emissions.*
- ◆ Depending on the level of dirt present, the shape and size of the parts to be cleaned, the Plastic Cleaner - D 195 850 A1- can be applied and wiped off with either a brush or a cleaning cloth.
- ◆ To avoid contaminating the content of the original canister, the cleaner should either be poured onto the cloth (do not press the cloth onto the opening and tip the canister) or it should be poured into a separate container (tin can etc.).
- ◆ Only the amount needed for cleaning should be poured out and the original canister should be closed again immediately.
- ◆ The cleaned surfaces should be allowed to dry completely (depending on circumstances 2 - 10 minutes) before the adhesive or sealant is applied.
- ◆ Blowing with compressed air can reduce the drying time but in some cases the effect of cleaning can be negated by compressed air with an oil content.
- ◆ Base surfaces with open pores should be allowed to dry for at least 30 minutes before cleaning. When cleaning cut material (for example, when inserting permanently glazed vehicle windows) the processing guidelines of these products must be observed.

## Characteristics

Color	Water-bright, transparent
Odor	Gasoline

## 3.16.4 Antistatic Plastic Cleaner

### Definition:

- ◆ Antistatic Plastic Cleaner - LVM 001 001 A2-



#### Note

*The usage and application instructions for the Antistatic Plastic Cleaner - LVM 001 001 A2- are described in the appropriate base components.*

Possible base components are:

- ◆ Refer to ➔ [“3.6.4 Two-Part Plastic Adhesive Filler”, page 127](#)

### 3.16.5 Industrial Dirt Remover

Definition:

- ◆ Industrial Dirt Remover - ABS 600 000 10-

Edition 05/2004

#### Product Description

Industrial Dirt Remover - ABS 600 000 10- is used to remove surface rust (metal dust) from the vehicle body. The product is used undiluted.



#### Caution

***The product contains organic and inorganic acids.***

***Protective gloves and glasses must be worn when handling this product!***

#### Application Instructions



#### Note

- ◆ *Before starting to apply, it is necessary to read the safety measures and advice in the safety data sheet.*
- ◆ *Even for products which are not required to be labeled by law, the usual safety measures must be observed for chemical emissions.*

#### Application/Processing

During application, observe the following:

- ◆ The temperature of the cleaner and vehicle body must not exceed 25 °C (77 °F) (do not expose the vehicle and product to direct sunlight).
- ◆ After washing the vehicle, the product is applied to the vehicle body using a brush or sponge. Let the product work for approximately 10 minutes (do not increase the exposure time, otherwise the paint or plastic parts may corrode). Do not dry the product.
- ◆ Rinse and wash the body/vehicle with plenty of water.
- ◆ If the vehicle is still not clean after one use, repeat the cleaning procedure.

#### Characteristics

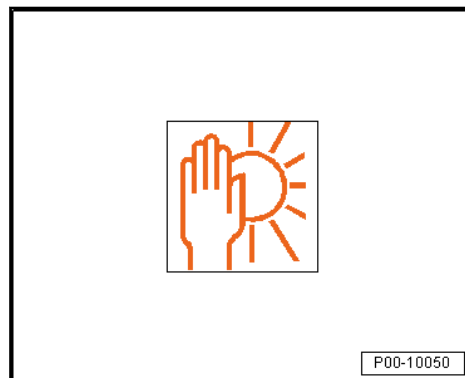
Chemical composition	Highly-effective cleaning combination out of organic and inorganic acids, surface-active agents and water.
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Color	Water-clear, transparent/clear, colorless fluid
pH value	1
Density at 15 °C (59 °F)	EN ISO 12185 1.076 ± 0.015 g (0 ± 0 oz)/ml

### Storage

The guaranteed shelf life of 36 months from date of manufacture. Use no later than the date indicated on the label and store in original container at +15 °C to +30 °C (59 °F to 86 °F).



## 3.17 SprayMax System

⇒ [“3.17.1 One-Part Anti-Corrosion Primer”, page 310](#)

⇒ [“3.17.2 One-Part Test Paint”, page 313](#)

⇒ [“3.17.3 One-Part Clear Coat”, page 315](#)

⇒ [“3.17.4 One-Part Wash Primer”, page 318](#)

⇒ [“3.17.5 One-Part Clean Spray Can LLS MAX 099 , and One-Part Clean Spray Can LLS MAX 100 , Aquaplus System”, page 321](#)

⇒ [“3.17.6 One-Part Clean Spray Can LLS MAX 112 , Aqua Premium System”, page 327](#)

⇒ [“3.17.7 Two-Part Filler”, page 334](#)

⇒ [“3.17.8 Two-Part HS Performance Filler”, page 340](#)

⇒ [“3.17.9 Two-Part Clear Coat”, page 346](#)

⇒ [“3.17.10 Two-Part Epoxy Primer Filler”, page 349](#)

⇒ [“3.17.11 Two-Part Wash Primer”, page 355](#)

⇒ [“3.17.12 Silicone Remover LLS MAX 007 ”, page 360](#)

⇒ [“3.17.13 Silicone Remover, Long LLS MAX 008 ”, page 362](#)

⇒ [“3.17.14 Blender”, page 364](#)

### 3.17.1 One-Part Anti-Corrosion Primer

#### Definition:

- ◆ One-Part Anti-Corrosion Primer - LLS MAX 003 M2- , red-dish brown

Edition 03/2013

#### Product Description

The One-Part Anti-Corrosion Primer - LLS MAX 003 M2- is a zinc chromate-free one-part product from the PVB system.

It can be used as a wash primer for all conventional metallic base surfaces.

For work safety, wear appropriate, personal protective equipment.

Characteristics:



- ◆ Good corrosion protection properties
- ◆ Easy handling (one-part material)

### Application Instructions

#### Base surface

Suitable base surfaces:

- ◆ Bare sheet steel, sanded
- ◆ Cleaned and sanded, galvanized/electrolytically zincd sheet steel or soft aluminum
- ◆ Thoroughly sanded old primer or factory primer (excluding thermoplastic coating)
- ◆ Original replacement primer, sanded
- ◆ Surfaces prepared with two-part polyester products and then sanded very fine.



#### Note

*Because of the wide variety of alloys and manufacturing processes for metals, the base surface must first be tested to ensure that the pre-treatment provides sufficient adhesion.*

#### Pre-treatment of base surfaces

- Carefully clean using Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5-.

- Sand the factory or old paint.
- Thoroughly remove any potential rust spots and sand any transitions to old paint.



P00-10038



P00-10037



- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.

## Processing

### Application:

- Shake the can thoroughly for two minutes.

### Application type “coat”

- Apply two spray applications with a 5 to 10 minute intermediate flash-off time.

### Spraying distance:

- Maintain a distance of 20 to 25 cm.
- The recommended dry layer thickness is between 15 and 20 µm.



### Note

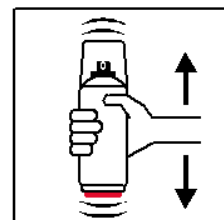
*If the spraying procedure is interrupted, make sure that the valve above the spray head is empty to prevent any nozzle blockage.*

## Drying

Dry at +20 °C (68 °F) room temperature for 10 to 20 minutes.



P00-10038



P00-10234



P00-10034



P00-10027





## Reworking

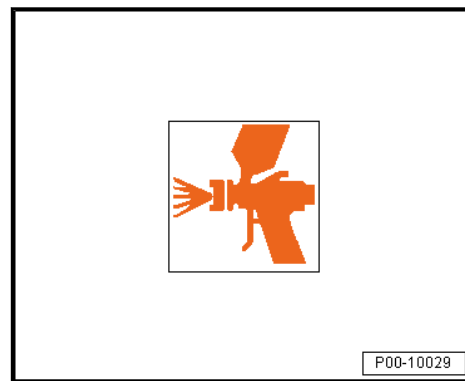
Can be painted over with:

- ◆ Two-part HS filler (for application, see the respective ATI)
- ◆ Two-part HS top coats
- ◆ Water-based base paint and two-part HS clear coat



### Note

- ◆ Do not rework with polyester products and epoxy products.
- ◆ Do not apply to thermoplastic coatings.
- ◆ Do not directly rework with water-based base paint.



### Caution

**For work safety, wear appropriate, personal protective equipment.**

**Note the safety data sheets as well as the warnings on the label of the spray nozzle.**

**Shake briefly again before every subsequent spray application.**

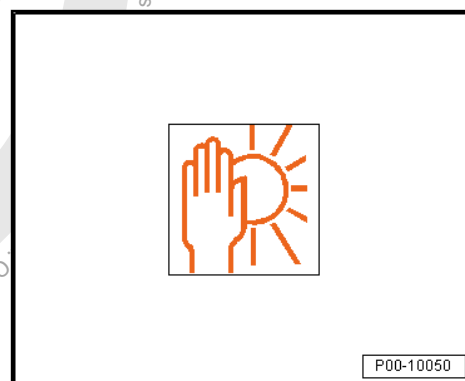
**Dispose of the empty spray cans as recyclable material.**

## Characteristics

VOC value: 2004/42/IIIB (e) (840) 690	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 840 g (29.6 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 690 g (24.3 oz)/L.
--	---

## Storage

The guaranteed shelf life of 60 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



## 3.17.2 One-Part Test Paint

### Definition:

- ◆ One-Part Test Paint - LLS MAX 005- , black

Edition 10/2008

### Product Description

The One-Part Test Paint - LLS MAX 005- is a one-part product from special NC resin combinations.

Characteristics:



- ◆ Easy application (one-part material)
- ◆ Dries quickly
- ◆ High yield
- ◆ High covering capacity
- ◆ Even application
- ◆ Easy to sand

### Application Instructions

#### Application

Detecting uneven surfaces in primer- and filler base surfaces

#### Base surface

Suitable base surfaces:

- ◆ All primers unsanded
- ◆ All applied fillers unsanded

Pre-treatment of base surfaces:

- Carefully clean using the Silicone Remover - LLS MAX 007- or Silicone Remover, Long - LLS MAX 0008- .

#### Processing

For work safety, wear appropriate, personal protective equipment.

- ◆ Latex or nitrile protective gloves, for example
- ◆ Breathing mask, for example type A2/P2

Application:

- Thoroughly shake the can for at least two minutes and perform a short "spray test".

Application type "coat"

- Apply one misty, thin and even spray application.
- The recommended dry layer thickness is 15 µm.

Spraying distance:

- Maintain a distance of 20 to 25 cm.

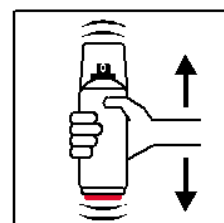


#### Note

*If the spraying procedure is interrupted, make sure that the valve above the spray head is empty to prevent any nozzle blockage.*



P00-10038



P00-10234



P00-10034



## Drying

Dry at +20 °C (68 °F) room temperature for 10 minutes. IR drying is possible with this product.



### Caution

***For work safety, wear appropriate, personal protective equipment.***

***Note the safety data sheets as well as the warnings on the label of the spray nozzle.***

***Shake briefly again before every subsequent spray application.***

***Dispose of the empty spray cans as recyclable material.***



P00-10027

## Characteristics

Solid matter content	Approximately 16 %
Yield	Approximately 0.5 m <sup>2</sup> / spray can with 30 to 40 µm dry layer thickness
Note	Used only by a professional
VOC value	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 650 to 693 g (22.9 to 24.4 oz)/L volatile organic compounds. The VOC value of this product in ready-to-use form is a maximum of 260 to 277 g (9.2 to 9.8 oz)/can.

## Storage

The guaranteed shelf life of 60 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



P00-10050

### 3.17.3 One-Part Clear Coat

#### Definition:

- ◆ One-Part Clear Coat - LLS MAX 010-

Edition 10/2008

#### Product Description

The One-Part Clear Coat - LLS MAX 010- is a one-part product. The raw material base is acrylic resin.

#### Characteristics:

- ◆ Easy application (one-part material)
- ◆ Dries quickly
- ◆ High gloss
- ◆ Universal usage



- ◆ Easy polishing

## Application Instructions

### Application

Repair work and partial painting

### Base surface

Suitable base surfaces:

- ◆ Solvent or water-based base paints
- ◆ The base paint can be painted over with One-Part Clear Coat - LLS MAX 010- after 30 minutes.

Pre-treatment of base surfaces:

- The base surface must be free of dust and grease.



P00-10038

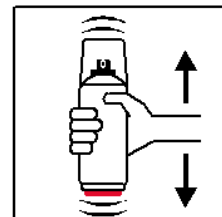
### Processing

For work safety, wear appropriate, personal protective equipment.

- ◆ Latex or nitrile protective gloves, for example
- ◆ Breathing mask, for example type A2/P2

Application:

- Thoroughly shake the can for at least two minutes and perform a short “spray test”.



P00-10234

Application type “coat”

- Apply two to three spray applications with a 5 to 10 minute intermediate flash-off time.
- The recommended dry layer thickness is between 30 and 40 µm.

Spraying distance:

- Maintain a distance of 20 to 25 cm.



### Note

*If the spraying procedure is interrupted, make sure that the valve above the spray head is empty to prevent any nozzle blockage.*



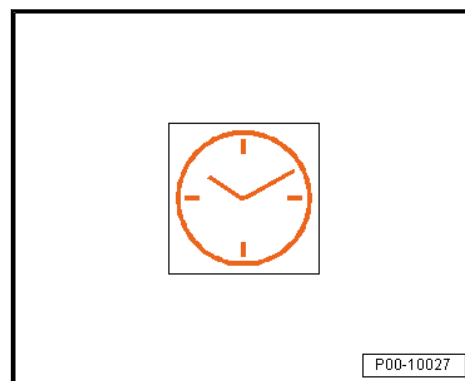
P00-10034



## Drying

Air drying at +20 °C (68 °F) room temperature is:

- ◆ Dust dry after 10 minutes
- ◆ Firm coating after 20 minutes
- ◆ Polishable after 12 hours



IR drying is possible with this product. With short-wave heater, the IR drying is seven minutes.

## Further Processing

- The One-Part Clear Coat - LLS MAX 010- can be polished after 12 hours of air drying at +20 °C (68 °F) room temperature using a commercially available polish.



**Caution**

**For work safety, wear appropriate, personal protective equipment.**

**Note the safety data sheets as well as the warnings on the label of the spray nozzle.**

**Shake briefly again before every subsequent spray application.**

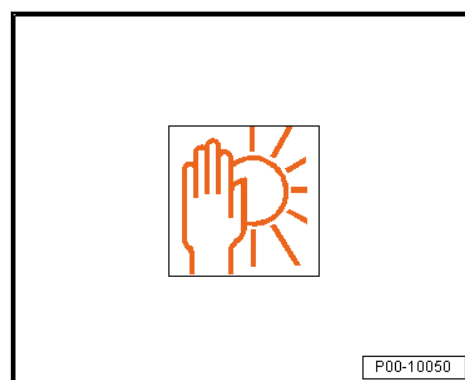
**Dispose of the empty spray cans as recyclable material.**

## Characteristics

Solid matter content	20% by weight
Yield	Approximately 0.5 m <sup>2</sup> to 0.75 m <sup>2</sup> /spray can with 30 - 40 µm dry layer thickness
Gloss level	90 units (60° measurement geometry)
Note	Used only by a professional
VOC value:	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 629 g (22.2 oz)/L volatile organic compounds. The VOC value of this product in ready-to-use form is a maximum of 252 g (8.9 oz)/can.

## Storage

The guaranteed shelf life of 60 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).





### 3.17.4 One-Part Wash Primer

#### Definition:

- ◆ One-Part Wash Primer - LLS MAX 106 M2- , light gray
- ◆ One-Part Wash Primer - LLS MAX 107 M2- , dark gray

Edition 03/2013

#### Product Description

The One-Part Wash Primer - LLS MAX 106/107 M2- are zinc chromate-free one-part products from the PVB system.

It can be used as a wash primer for all conventional metallic base surfaces.

For work safety, wear appropriate, personal protective equipment.

#### Characteristics:

- ◆ Good corrosion protection properties
- ◆ Easy handling (one-part material)
- ◆ Available in two shades of gray

#### Application Instructions

##### Base surface

Suitable base surfaces:

- ◆ Bare sheet steel, sanded
- ◆ Cleaned and sanded, galvanized/electrolytically zinc sheet steel or soft aluminum
- ◆ Thoroughly sanded old primer or factory primer (excluding thermoplastic coating)
- ◆ Surfaces prepared with two-part polyester products and then sanded very fine.



#### Note

*Because of the wide variety of alloys and manufacturing processes for metals, the base surface must first be tested to ensure that the pre-treatment provides sufficient adhesion.*

#### Pre-treatment of base surfaces:

- Carefully clean using Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .



P00-10038



- Sand the factory or old paint.
- Thoroughly remove any potential rust spots and sand any transitions to old paint.



P00-10037

- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.

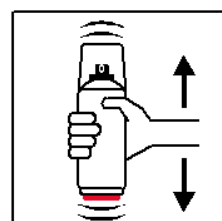


P00-10038

### Processing

Application:

- Shake the can thoroughly for two minutes.



P00-10234



#### Application type "coat"

- Apply one to three spray applications with a 5 to 10 minute intermediate flash-off time.

#### When using as wash primer:

- Apply one to two spray applications with a 5 to 10 minute intermediate flash-off time.

#### Spraying distance:

- Maintain a distance of 20 to 25 cm.
- The recommended dry layer thickness is between 10 and 20 µm.

#### Insulating small, sanded-through areas (no larger than 5.0 cm):



#### Note

- ◆ *Water-based base paints or two-part HS top coats may only be applied using wet-in-wet and intermediate sanding processes on the one-part wash primer if the sanded-through area is not larger than 5.0 cm. Application occurs in one to three spray applications with a 10-40 µm dry layer thickness.*
- ◆ *If the spraying procedure is interrupted, make sure that the valve above the spray head is empty to prevent any nozzle blockage.*

#### Drying

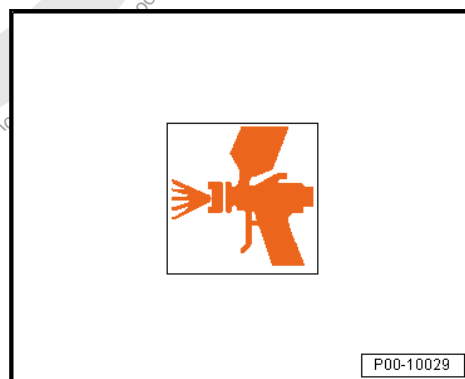
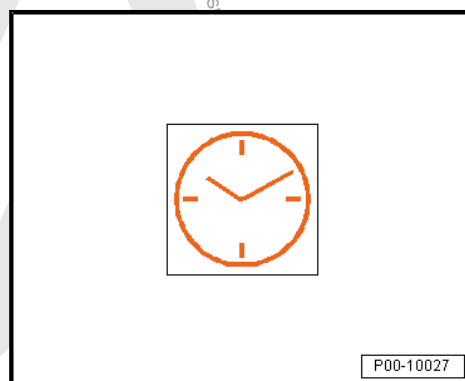
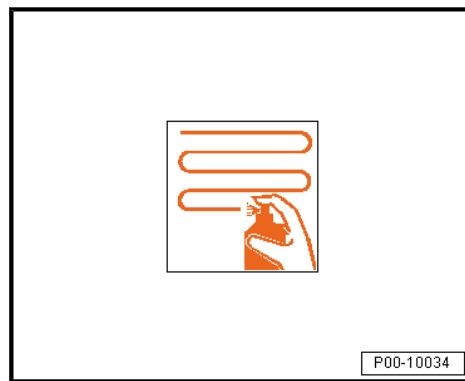
Dry at +20 °C (68 °F) room temperature for 10 to 20 minutes.  
The material can be sanded after 45 to 60 minutes.

#### Can be painted over with:

- ◆ Two-part acrylic filler after 10 to 15 minutes.
- ◆ Two-part HS top coat after 10 to 15 minutes (only for small, sanded-through areas).
- ◆ Water-based base paint after 20 to 30 minutes (only for small, sanded-through areas).

#### Reworking

1. - Using as a wash primer to be able to paint over with two-part HS filler.
2. - Using as a wash primer to insulate small, sanded-through areas:







Wet-sand with P 800-1000 grit sandpaper

Can be painted over with:

- ◆ Two-part HS top coat (for small sanded-through areas only)
- ◆ Water-based base paint and two-part HS clear coat (for small sanded-through areas only)



#### Note

- ◆ Do not rework with polyester products and epoxy products.
- ◆ Do not apply to thermoplastic coatings.
- ◆ Do not dry-sand.



#### Caution

**For work safety, wear appropriate, personal protective equipment.**

**Note the safety data sheets as well as the warnings on the label of the spray nozzle.**

**Shake briefly again before every subsequent spray application.**

**Dispose of the empty spray cans as recyclable material.**



P00-10041

#### Characteristics

VOC value: 2004/42/IIIB (e) (840) 690	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 840 g (29.6 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 690 g (24.3 oz)/L.
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#### Storage

The guaranteed shelf life of 60 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



P00-10050

### 3.17.5 One-Part Clean Spray Can - LLS MAX 099- , and One-Part Clean Spray Can - LLS MAX 100- , Aquaplus System

#### Definition:

- ◆ One-Part Clean Spray Can - LLS MAX 099- , 250 ml for Water-Based Mixed Paint "Aquaplus System"
- ◆ One-Part Clean Spray Can - LLS MAX 100- , 400 ml for Water-Based Mixed Paint "Aquaplus System"



Edition 09/2013

## Product Description

These products include a paint spray nozzle prefilled with a propellant gas- and solvent combination which is particularly compatible with the "Aquaplus System" and "Aqua Premium System".

Only use the Fill-Clean Filling Device for filling.

Application area: exclusively clever repair

## Handling Instructions

This product includes a paint spray nozzle prefilled with propellant gas- and solvent combination which is particularly compatible with the "Aquaplus System" and "Aqua Premium System".

This can contains no paint material. It is a half-finished product.

The processable end product is formed by adding in 100mL of undiluted Aquaplus or Aqua Premium base paint using the Fill-Clean Filling Device designed for this purpose.

When using ready-made and paint-filled spray cans, re-label it before using. This can be carried out, for example, by using a color label that is produced by the mixing bench formula range and printed out.

Make sure that, the information indicated in the following example is present on the label.

- ◆ The contents of 316 mL (0.32 L) on the label correspond to a filled spray can.
- ◆ It is pre-filled with 216 ml propellant gas and solvent, as well as 100 ml of subsequently added Aquaplus or Aqua-Premium base paint including Additive for Aqua Premium - LVM 035 200- or Additive for Aqua Premium - LVM 035 301-



## Note

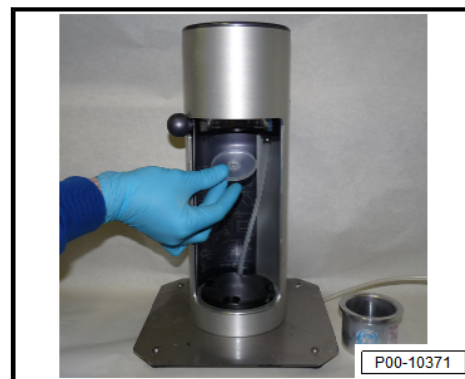
- ◆ *For work safety, wear appropriate, personal protective equipment.*
- ◆ *Set up the device in a well-ventilated room.*
- ◆ *Do not fill the filling cans above their maximum capacity. There is a risk of explosion!*
- ◆ *Never use poisonous, carcinogenic materials or halogenated hydrocarbons to fill the spray can.*
- ◆ *Caution: electrostatic charge Only clean the plastic parts with a moist cloth.*
- ◆ *All repair work must be performed by a qualified professional.*
- ◆ *Paint residue should be removed from the device regularly with a cloth and appropriate cleaning solution.*
- ◆ *Routinely check the condition of the compressed air supply line.*

## Clean Filling Procedure

Observe the operating instructions for the filling device.



- Set the filling pad on the pressing stamp.



- Set the Fill-Clean Filling cylinder on the spray can.



- Position/press the Fill-Clean cap.



- Fill with paint



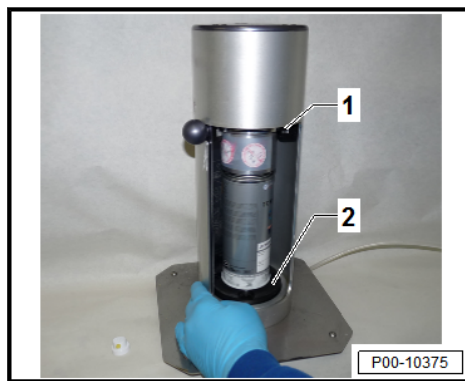


- Insert the Fill Clean can with the loaded filling cylinder into the upper groove -1- of the Fill Clean device.

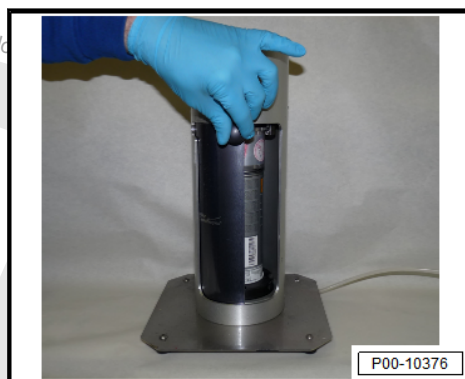


#### Note

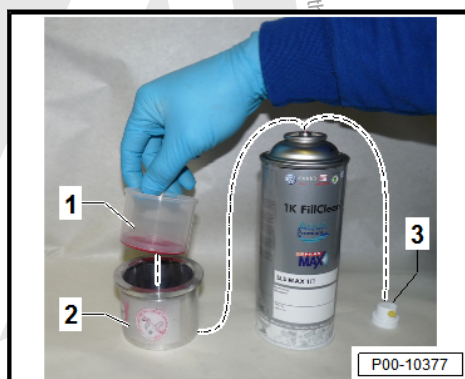
*When inserting the Fill Clean can into the upper groove -1-, the lower turntable -2- must first be at the very bottom. If the Fill Clean can is in the upper groove -1-, turn the turntable -2- as a counterhold upward.*



- Slide the cover with the button to the right to release the contents. Duration: approximately 10 seconds.



- Remove the filling cylinder -2- from the Fill-Clean can after filling.
- Remove the Fill-Clean cap -1- from the filling cylinder -2-.
- Position the spray head -3- on the Fill Clean can.



- The pad remains in the Fill Clean cap for color orientation.
- The Fill Clean can is now ready for use.



### Application Instructions

#### Base surface

Suitable base surfaces:

- ◆ Two-Part HS Filler
- ◆ Intact old paint
- ◆ One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2-
- ◆ ' Two-Part Plastic Adhesive Filler - LKF 696 009 A2- / Two-Part Plastic Adhesive Filler - LKF 696 040 A2-
- ◆ Plastic surfaces. Refer to <sup>3)</sup>.



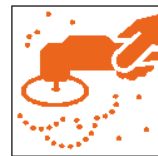
#### Pre-treatment of base surfaces:

- Thoroughly clean the factory or old paint or two-part HS filler using Silicone Remover - LSW 019 000 A5- , or beforehand with Silicone Remover, Long - LVM 020 100 A5- if very dirty.



P00-10038

- Dry-sand with rotary sander and dust extraction (P 400 to 500 grit).



P00-10040

- Or wet-sand with P 800-1000 grit sandpaper



P00-10041

- Before reworking the sanded base surfaces, thoroughly clean them again of dust, sanding residue and other dirt with Silicone Remover - LSW 019 000 A5-

#### 3) Special Instructions:

- ◆ Wipe off any excess silicone remover with a lint-free cloth, leaving no streaks. Refer to the technical application information here Refer to ⇒ [“3.16.2 Silicone Remover”, page 305](#) .
- ◆ Sanded-through areas must be primed with One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2- .
- ◆ The sanded-through areas must not be larger than 5.0 cm.
- ◆ When using the two-part HS filler, any bare areas must be primed with Two-Part Wash Primer - LHV 043 000 A2- or One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2- .
- ◆ It is recommended to create a spray test sample before processing.



P00-10038



## Processing

### Application:

- Shake the can thoroughly for at least two minutes to ensure a proper mixing.

### Application type “coat”

#### Spraying distance:

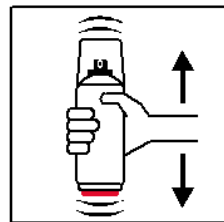
- Maintain a distance of 20 to 25 cm.
- The recommended dry layer thickness is between 15 and 20 µm.

- Apply two spray applications (one normal application + one finish/effect spray application) with 5 to 10 minutes intermediate flash-off time.



### Note

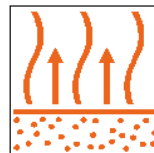
- ◆ For colors with poor covering properties, it may be necessary to apply another spray application (wet in wet).
- ◆ Alternatively, it can be ventilated to form a matte finish in-between spray applications.
- ◆ Make sure after ending or interrupting a spray application that the valve above the spray head is empty to prevent any nozzle blockage.



P00-10234



P00-10034



P00-10026





## Drying

Dry at +20 °C (68 °F) room temperature for 15 to 30 minutes.  
Important: allow to ventilate until matted.

Can be painted over with:

- ◆ Two-part HS clear coat (see data sheet of the respective product).
- ◆ Two-Part Clear Coat - LLS MAX 210- (reworking with other two-part HS clear coats is possible)



### Caution

***For work safety, wear appropriate, personal protective equipment.***

***Note the safety data sheets as well as the warnings on the label of the spray nozzle.***

***After filling shake the can for approximately two minutes.***

***Before applying shake the can for approximately two minutes.***

***Shake briefly again before every subsequent spray application.***

***Dispose of the empty spray cans as recyclable material.***



P00-10027

## Characteristics

VOC value: 2004/42/IIB (e) (840) 690	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 840 g (29.6 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 690 g (24.3 oz)/L.
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## Storage

The guaranteed shelf life for pre-filled spray cans only is 24 months.

The guaranteed shelf life for spray cans filled with paint is four weeks.



P00-10050

## 3.17.6 One-Part Clean Spray Can - LLS MAX 112- , Aqua Premium System

- ◆ One-Part Clean Spray Can - LLS MAX 112- , 400 ml for Water-Based Mixed Paint "Aqua Premium System"

Edition 05/2014

### Product Description

These products include a paint spray nozzle prefilled with a propellant gas- and solvent combination which is particularly compatible with the "Aquaplast System" and "Aqua Premium System".

Only use the Fill-Clean Filling Device for filling.



Application area: exclusively clever repair

### Handling Instructions

This product includes a paint spray nozzle prefilled with propellant gas- and solvent combination which is particularly compatible with the "Aquaplus System" and "Aqua Premium System".

This can contains no paint material. It is a half-finished product.

The processable end product is formed by adding in 100mL of undiluted Aquaplus or Aqua Premium base paint using the Fill-Clean Filling Device designed for this purpose.

When using ready-made and paint-filled spray cans, re-label it before using. This can be carried out, for example, by using a color label that is produced by the mixing bench formula range and printed out.

Make sure that, the information indicated in the following example is present on the label.

### Contents and prefilling

- ◆ The contents of 316 mL (0.32 L) on the label correspond to a filled spray can.
- ◆ It is pre-filled with 294 ml propellant gas and solvent, as well as 100 ml of subsequently added spray ready Aqua-Premium base paint including Additive for Aqua Premium - LVM 035 200- or Additive for Aqua Premium - LVM 035 301- .



### Note

- ◆ *For work safety, wear appropriate, personal protective equipment.*
- ◆ *Set up the device in a well-ventilated room.*
- ◆ *Do not fill the filling cans above their maximum capacity. There is a risk of explosion!*
- ◆ *Never use poisonous, carcinogenic materials or halogenated hydrocarbons to fill the spray can.*
- ◆ *Caution: electrostatic charge Only clean the plastic parts with a moist cloth.*
- ◆ *All repair work must be performed by a qualified professional.*
- ◆ *Paint residue should be removed from the device regularly with a cloth and appropriate cleaning solution.*
- ◆ *Routinely check the condition of the compressed air supply line.*

### Mixing Instructions for "Aqua Premium System"

Mixing containers:	Plastic containers or tin-coated cans painted on the inside
Screens:	Waterproof-glued or waterproof 125 µm strainer
Additive:	Additive for Aqua Premium - LVM 035 200/300/301- (at a normal/high temperature and low humidity depending on the respective object size)
Curing Time:	Process within 24 hours if possible after adding LVM 035 200/301 additive for Aqua Premium.



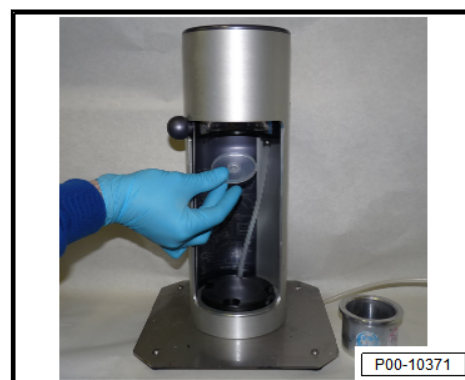


Adding additive at +20 °C (68 °F) material temperature:	20 % Additive for Aqua Premium - LVM 035 200/300/301-
Special instructions for:	Recommendation for solid colors: for the best possible reliable application, it is recommended to always use Additive for Aqua Premium - LVM 035 301- .

### Clean Filling Procedure

Observe the operating instructions for the filling device.

- Set the filling pad on the pressing stamp.



- Set the Fill-Clean Filling cylinder on the spray can.

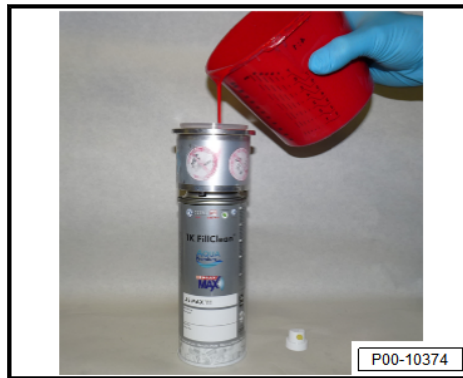


- Position/press the Fill-Clean cap.





- Fill with paint.

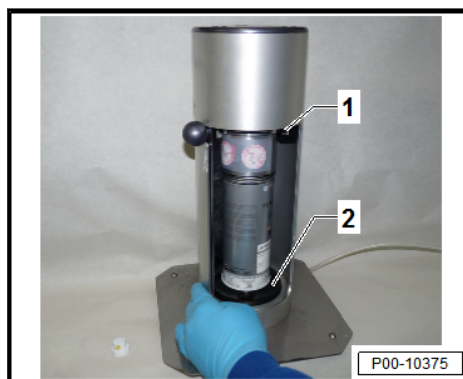


- Insert the Fill Clean can with the loaded filling cylinder into the upper groove -1- of the Fill Clean device.

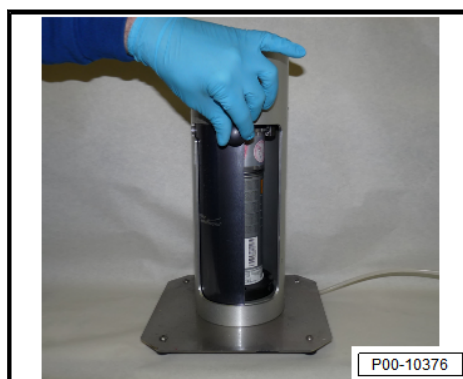


#### Note

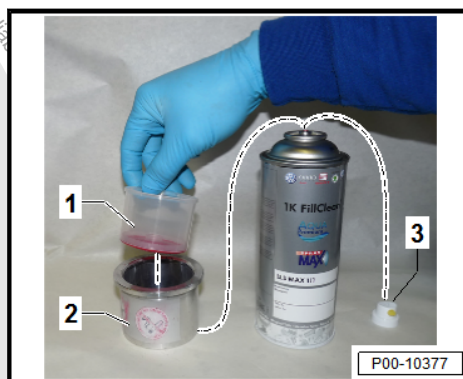
*When inserting the Fill Clean can into the upper groove -1-, the lower turntable -2- must first be at the very bottom. If the Fill Clean can is in the upper groove -1-, turn the turntable -2- as a counterhold upward.*



- Slide the cover with the button to the right to release the contents. Duration: approximately 10 seconds.



- Remove the filling cylinder -2- from the Fill-Clean can after filling.
- Remove the Fill-Clean cap -1- from the filling cylinder -2-.
- Position the spray head -3- on the Fill Clean can.





- The pad remains in the Fill Clean cap for color orientation.
- The Fill Clean can is now ready for use.

### Application Instructions

#### Base surface

Suitable base surfaces:

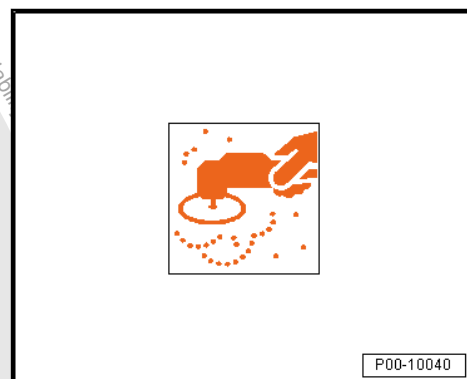
- ◆ Two-Part HS Filler
- ◆ Intact old paint
- ◆ One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2-
- ◆ ' Two-Part Plastic Adhesive Filler - LKF 696 009 A2- / Two-Part Plastic Adhesive Filler - LKF 696 040 A2-
- ◆ Plastic surfaces. Refer to <sup>4)</sup>.

Pre-treatment of base surfaces:

- Thoroughly clean the factory or old paint or two-part HS filler using Silicone Remover - LSW 019 000 A5- , or beforehand with Silicone Remover, Long - LVM 020 100 A5- if very dirty.



- Dry-sand with rotary sander and dust extraction (P 500 grit).



Or wet-sand with P 800-1000 grit sandpaper

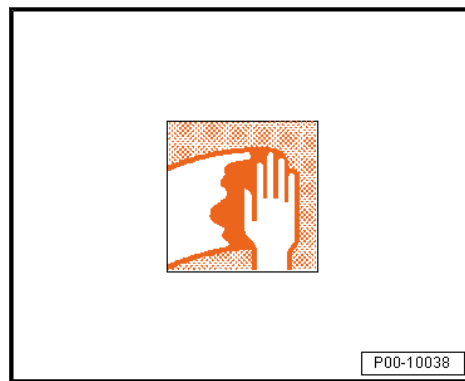




- Before reworking the sanded base surfaces, thoroughly clean them again of dust, sanding residue and other dirt with Silicone Remover - LSW 019 000 A5-

4) Special Instructions:

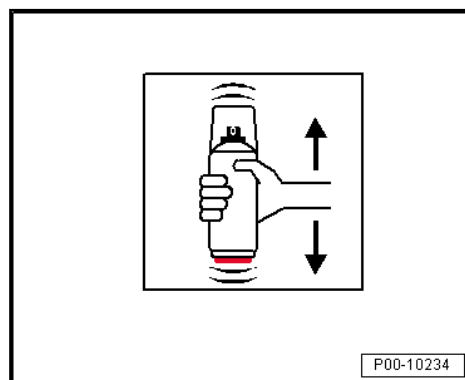
- ◆ Wipe off any excess silicone remover with a lint-free cloth, leaving no streaks. Refer to the technical application information here Refer to ➔ ["3.16.2 Silicone Remover", page 305](#) .
- ◆ Sanded-through areas must be primed with One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2- .
- ◆ The sanded-through areas must not be larger than 5.0 cm.
- ◆ When using the two-part HS filler, any bare areas must be primed with Two-Part Wash Primer - LHV 043 000 A2- or One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2- .
- ◆ It is recommended to create a spray test sample before processing.



## Processing

### Application:

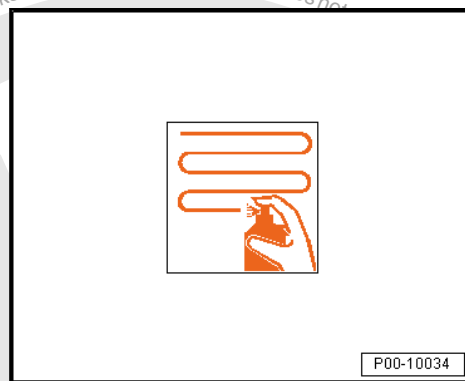
- Shake the can thoroughly for at least two minutes to ensure a proper mixing.



### Application type "coat"

### Spraying distance:

- Maintain a distance of 20 to 25 cm.
- The recommended dry layer thickness is between 15 and 20 µm.





- Apply two spray applications (one normal application + one finish/effect spray application) with 5 to 10 minutes intermediate flash-off time.
- The recommended dry layer thickness is approximately 15 to 20 µm.



#### Note

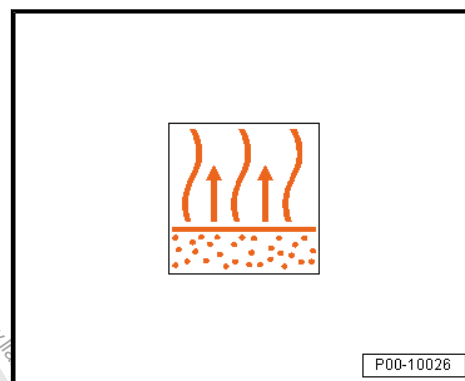
- ◆ For colors with poor covering properties, it may be necessary to apply another spray application (wet in wet).
- ◆ Alternatively, it can be ventilated to form a matte finish in-between spray applications.
- ◆ Make sure after ending or interrupting a spray application that the valve above the spray head is empty to prevent any nozzle blockage.

#### Drying/reworking

The drying/flash-off time for clear coat application is at +20 °C (68 °F) room temperature for 15 to 30 minutes. Important: allow to ventilate until matted.

Can be painted over with:

- ◆ Two-part HS clear coat (see data sheet of the respective product).
- ◆ Two-Part Clear Coat - LLS MAX 210- (reworking with other two-part HS clear coats is possible)



#### Caution

**For work safety, wear appropriate, personal protective equipment.**

**Note the safety data sheets as well as the warnings on the label of the spray nozzle.**

**After filling shake the can for approximately two minutes.**

**Before applying shake the can for approximately two minutes.**

**Shake briefly again before every subsequent spray application.**

**Dispose of the empty spray cans as recyclable material.**

#### Characteristics

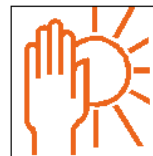
VOC value: 2004/42/IIB (e) (840) 690	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 840 g (29.6 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 690 g (24.3 oz)/L.
---	---



## Storage

The guaranteed shelf life for pre-filled spray cans only is 24 months.

The guaranteed shelf life for spray cans filled with paint is one week.



P00-10050

## 3.17.7 Two-Part Filler

### Definition:

- ◆ Two-Part Filler - LLS MAX 202 M2- , medium gray

Edition 03/2013

### Product Description

The Two-Part Filler - LLS MAX 202 M2- (medium gray) is a high-quality two-part HS sanding filler. The raw material base is acrylic resin.

### Characteristics:

- ◆ Constant atomizing pressure
- ◆ Aerosol distribution
- ◆ Long curing time
- ◆ Optimal and stable processing properties
- ◆ Great stability under load
- ◆ Sands well
- ◆ High yield
- ◆ Excellent high-build characteristics
- ◆ Application area: clever repair
- ◆ Professional painting result



### Note

*For work safety, wear appropriate, personal protective equipment.*

## Application Instructions

### Base surface

Suitable base surfaces:

- ◆ Sheet steel that has been cleaned, sanded and primed with Two-Part Wash Primer - LHV 043 000 A2- or One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2- , galvanized/electrolytically zincd sheet steel or soft aluminum.
- ◆ Finely sanded, thoroughly cleaned, original factory primer.
- ◆ Sanded factory paint or old paint (except TPA).



- ◆ Surfaces prepared with two-part polyester products and then sanded very fine.
- ◆ Cleaned and sanded UP-GF base surfaces, free of separating agents.

Pre-treatment of base surfaces:

- Carefully clean using Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .



- Sand the factory or old paint.
- Thoroughly remove any potential rust spots and sand any transitions to old paint.



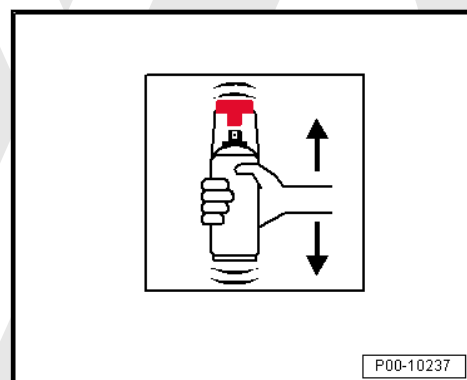
- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.



**Processing**

Activating the Two-Part Spray Can:

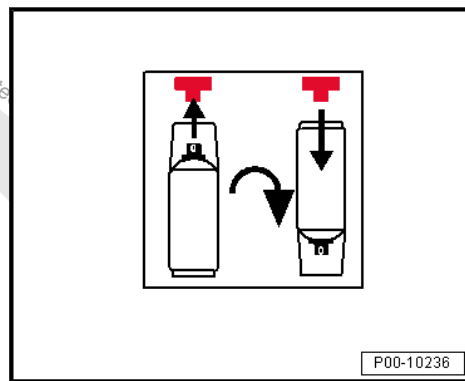
- Shake before using.



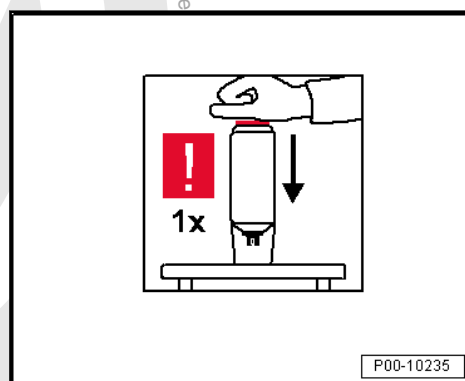




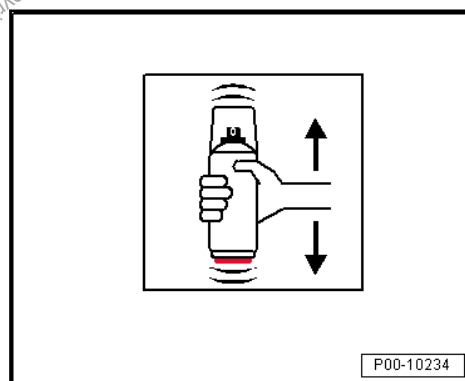
- Remove the red push button on the cap and set it on the valve for the hardener mixture on the bottom of the can.



- Press in the valve for the hardener mixture. Make sure when pressing down the valve for the hardener mixture that the can is upside down.

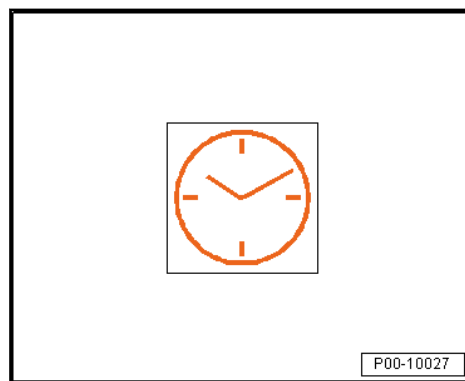


- Shake the can thoroughly for two minutes.



Working time/pot life:

- Eight hours at +20 °C (68 °F)







#### Application type "coat"

- Apply two to three spray applications to cover with a 5 to 10 minute intermediate flash-off time.

#### Spraying distance:

- Maintain a distance of 20 to 25 cm.
- The recommended dry layer thickness is approximately 80 to 120 µm.



#### Note

*If the spraying procedure is interrupted, make sure that the valve above the spray head is empty to prevent any nozzle blockage.*

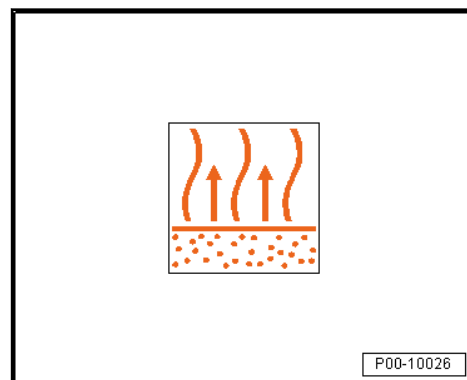
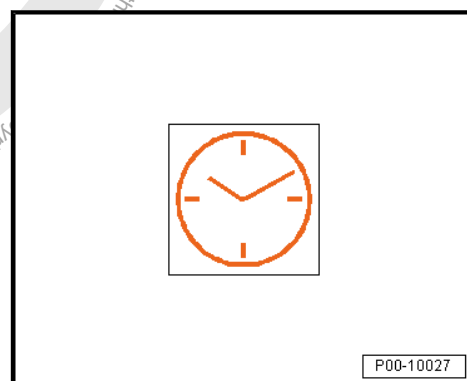
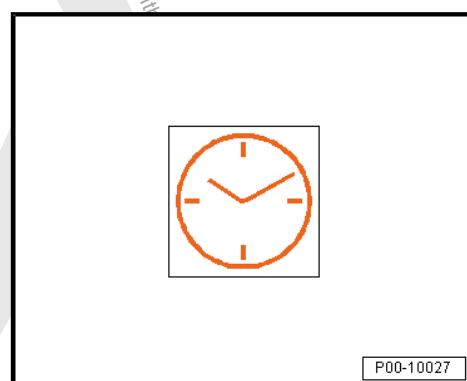
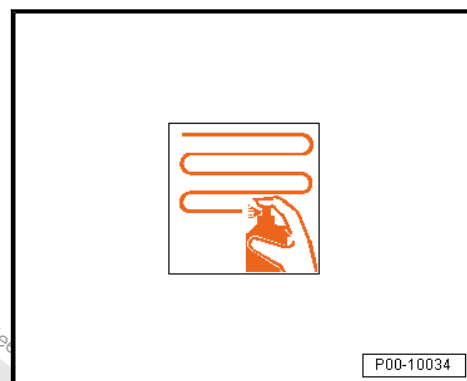
#### Drying

Air drying at +20 °C (68 °F) room temperature is:

- ◆ Three to four hours for a dry layer thickness of 80 to 120 µm.

The flash-off time with forced drying is at least 5 to 15 minutes.

Forced drying at +60 °C (140 °F) object temperature is 30 to 40 minutes for a layer thickness of 80 to 120 µm.



The flash-off time for IR drying is a minimum of 5 to 10 minutes.



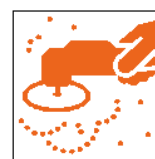
IR drying for a layer thickness of 80 to 120 µm is 10 minutes with a short-wave heater and 15 minutes with a medium-wave heater.



P00-10028

### Further Processing

- Dry-sand with rotary sander and dust extraction. P400-500 grit sandpaper.



P00-10040

- Wet-sand with P800-1000 grit sandpaper



P00-10041



## Reworking

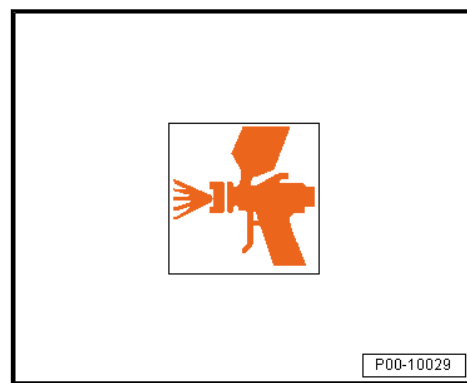
Can be painted over with:

- ◆ Two-part HS top coats
- ◆ Water-based base paint and two-part HS clear coat



### Note

- ◆ Any gaps in the base surface can be "filled" in with two-part polyester filler.
- ◆ After drying and intermediate sanding, the filled patches can be re-insulated using Two-Part Epoxy Primer Filler - LLS MAX 220 M1/M2- or a two-part HS premium filler.
- ◆ The best insulation, even with critical surfaces, is achieved with a medium layer of 80 to 120 µm is applied in two to three spray applications, with air-drying overnight, or oven/IR drying. With critical surfaces, fine preparation is required and the parts must be evenly filled.
- ◆ The Two-Part HS Vario Filler - LGF 786 004 A4- (gray) is recommended for insulating thermoplastic coatings.



### Caution

**For work safety, wear appropriate, personal protective equipment.**

**Note the safety data sheets as well as the warnings on the label of the spray nozzle.**

**Shake briefly again before every subsequent spray application.**

**Dispose of the empty spray cans as recyclable material.**



### WARNING

- ◆ Coating materials ready for application which contain isocyanate may cause irritation to mucous membranes (especially the respiratory organs) and cause hypersensitive reactions.
- ◆ Sensitization may occur if vapors and spray mist are inhaled.
- ◆ Carefully observe all rules for working with coating materials containing solvents when working with coating materials containing isocyanate. Particular care must be taken to prevent inhalation of spray mist and vapor.
- ◆ Persons suffering from allergies, asthma or other respiratory problems should not work with coating products containing isocyanate.

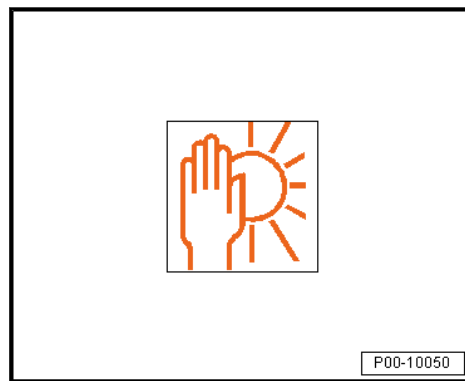
## Characteristics

VOC value: 2004/42/IIIB (e) (840) 690	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 840 g (29.6 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 690 g (24.3 oz)/L.
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## Storage

The guaranteed shelf life of 36 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



## 3.17.8 Two-Part HS Performance Filler

### Definition

- ◆ Two-Part HS Premium Filler - LLS MAX 973 M1- , medium gray

Edition 05/2018

### Product Description

The Two-Part HS Premium Filler - LLS MAX 973 M1- (medium gray) is a high-quality two-part HS sanding filler. The raw material base is acrylic resin.

#### Characteristics:

- ◆ Sands very well
- ◆ Application area: clever repair
- ◆ Dries quickly
- ◆ Great stability under load



### Note

*For work safety, wear appropriate, personal protective equipment.*

### Application Instructions

#### Base surface

Suitable base surfaces:

- ◆ Sheet steel that has been cleaned, sanded and primed with Two-Part Wash Primer - LHV 043 000 A2- or One-Part Wash Primer - LVM 044 007 A2- / One-Part Wash Primer - LVM 044 171 A2- , galvanized/electrolytically zinc coated steel or soft aluminum.
- ◆ Fine sanded or non-sanded, thoroughly cleaned, original factory primer.
- ◆ Sanded factory paint or old paint (except TPA),
- ◆ Surfaces prepared with two-part polyester products and then sanded very fine,
- ◆ Cleaned and sanded UP-GF base surfaces, free of separating agents.



#### Pre-treatment of base surfaces:

- Carefully clean using Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .



P00-10038

- Sand the factory or old paint.
- Thoroughly remove any potential rust spots and sand any transitions to old paint.



P00-10037

- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.

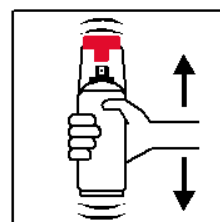


P00-10038

#### Processing

##### Activating the Two-Part Spray Can:

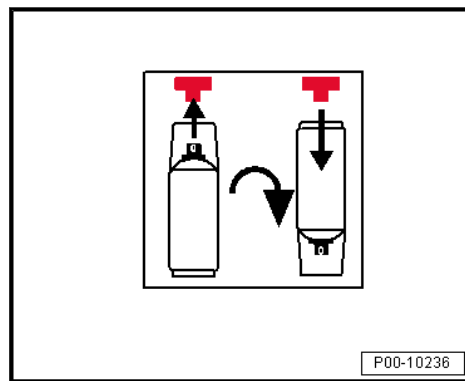
- Shake before using.



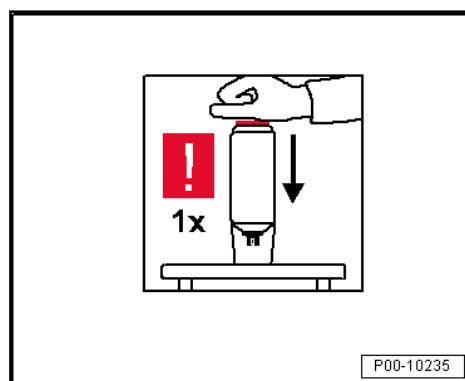
P00-10037



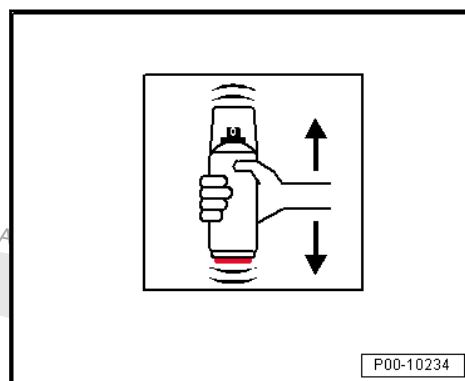
- Remove the red push button on the cap and set it on the valve for the hardener mixture on the bottom of the can.



- Press in the valve for the hardener mixture. Make sure when pressing down the valve for the hardener mixture that the can is upside down.

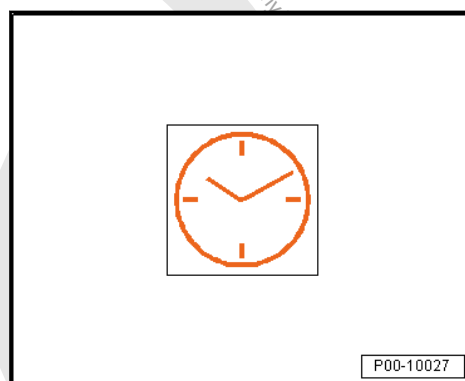


- Shake the can thoroughly for two minutes.



Working time/pot life:

- Four to five hours at +20 °C (68 °F)





#### Application type "coat"

- Apply two to three covered spray applications.

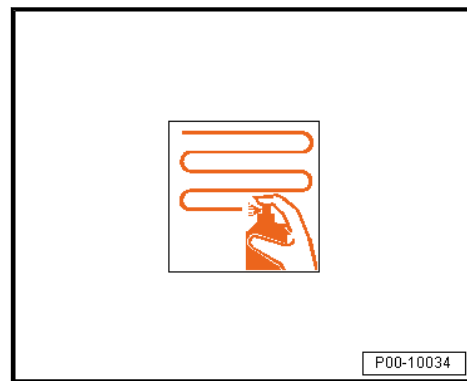
#### Spraying distance:

- Maintain a distance of 15 to 20 cm.
- The recommended dry layer thickness is approximately 30 to 65 µm.



#### Note

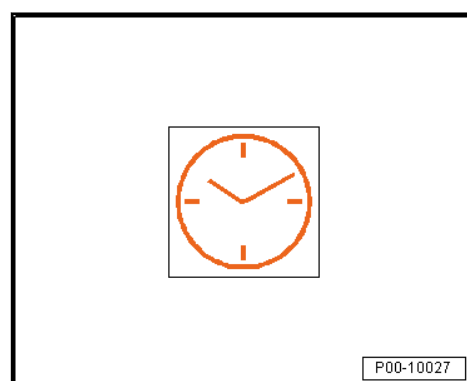
*If the spraying procedure is interrupted, make sure that the valve above the spray head is empty to prevent any nozzle blockage.*



#### Drying

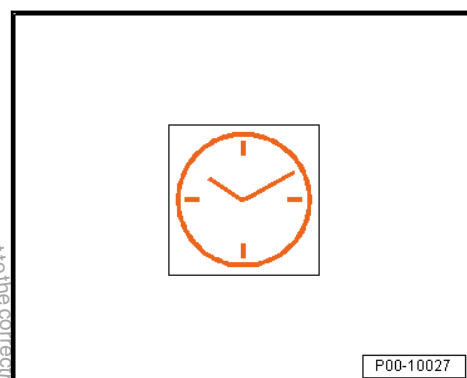
Air drying at +20 °C (68 °F) room temperature is:

- ◆ At a dry layer thickness of 40-65 µm 2 to 3 hours.

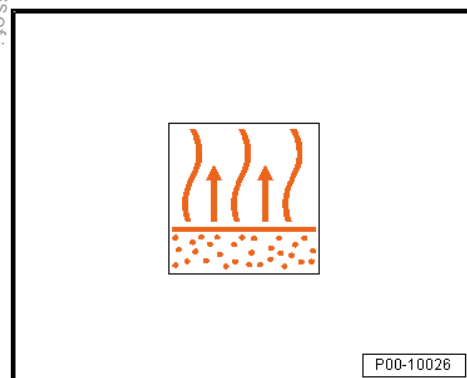


The flash-off time with forced drying is at least 5 to 10 minutes.

The forced drying at +60 °C to 65 °C (140 °F to 149 °F) object temperature and at a layer thickness of 40-65 µm for 15 to 20 minutes.



The flash-off time for IR drying is a minimum of 5 to 10 minutes.





The IR drying at a layer thickness of 40-65 µm is 2 minutes with a short-wave heater at 70 °C (158 °F) and 8 minutes at maximum 90 °C (194 °F).



#### Note

*For previous use of the spray filer and/or filler is required, reduce the output to maximum 90 °C (194 °F) or increase the distance to the base surface.*

#### Dryer when inserting under scraper

Forced drying under scraper:

Forced drying is at +60 °C (140 °F) object temperature for 45 minutes.

IR drying under scraper:

- The IR drying at a layer thickness of 40-65 µm is 2 minutes with a short-wave heater at 70 °C (158 °F) and 15 minutes at maximum 90 °C (194 °F).

Filler sanding under scraper

- Dry sanding with P220-280 grit sandpaper.



P00-10028



P00-10027



P00-10028



P00-10042





## Further Processing

- Dry-sand with rotary sander and dust extraction. P400-500 grit sandpaper.



P00-10040

## Reworking

Can be painted over with:

- ◆ Two-part HS top coats
- ◆ Water-based base paint and two-part HS clear coat



### Caution

**For work safety, wear appropriate, personal protective equipment.**

**Note the safety data sheets as well as the warnings on the label of the spray nozzle.**

**Before processing and activating the hardener cartridge, the can must be shaken for approximately two minutes. Shake briefly again before every subsequent spray application.**

**Dispose of the empty spray cans as recyclable material.**



P00-10029

## Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

## Characteristics

VOC value: 2004/42/ IIB(e) (840)690	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 840 g (29.6 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 690 g (24.3 oz)/L.
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P00-10820

## Storage

The guaranteed shelf life of 36 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



P00-10050



### 3.17.9 Two-Part Clear Coat

#### Definition:

- ◆ Two-Part Clear Coat - LLS MAX 210

Edition 12/2010

#### Product Description

The Two-Part Clear Coat - LLS MAX 210- is a high-gloss two-part clear coat for long-lasting sealing of painted surfaces. It is specially developed for part and repair paint jobs. This product is characterized by its resistance to weather and chemicals, an exceptional gasoline resistance and good polishability. The two-part clear coat has good flow properties and tends to be used for larger surfaces (one to two vehicle body parts). The raw material base is acrylic resin. The hardener contains isocyanate.

#### Characteristics:

- ◆ Constant atomizing pressure
- ◆ Aerosol distribution
- ◆ Excellent filling ability
- ◆ Application area: touch up in part- and repair paint job area
- ◆ Professional painting result



#### Note

- ◆ *For work safety, wear appropriate, personal protective equipment:*
- ◆ *Breathing mask type: A2/P2*
- ◆ *Latex or nitrile protective gloves, for example*

#### Application Instructions

##### Base surface

Suitable base surfaces:

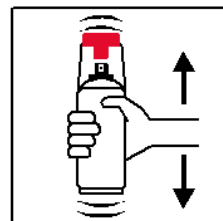
- ◆ Solvent- and water-soluble base paint systems
- ◆ Old paints, cleaned and sanded

Base surface	Suitability
One-part base paint	+++
One-part water-based paint	+++
Two-part top coat	++
Old paints	+++

#### Processing

Activating the Two-Part Spray Can:

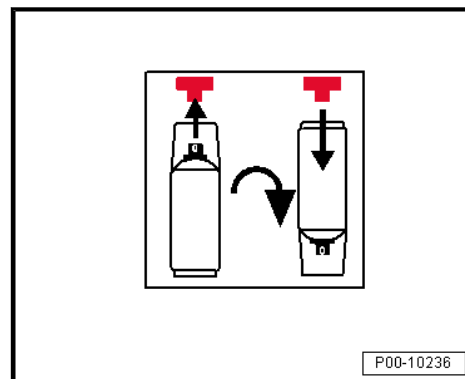
- Before activating, thoroughly shake the can for two minutes.



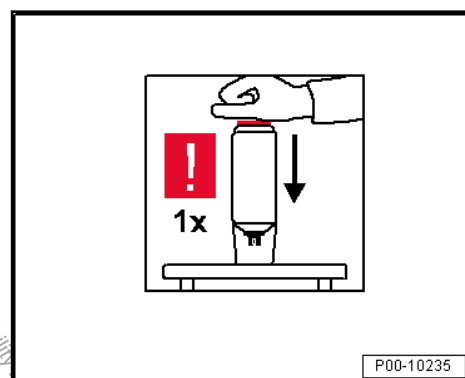
P00-10237



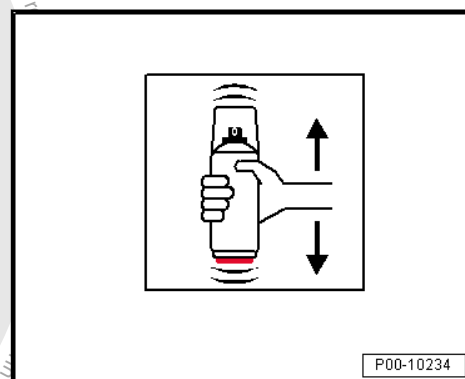
- Remove the red push button on the cap and set it on the valve for the hardener mixture on the bottom of the can.



- Press in the valve for the hardener mixture. Make sure when pressing down the valve for the hardener mixture that the can (with the cap) is upside down.



After activating, thoroughly shake the can again for at least two minutes.



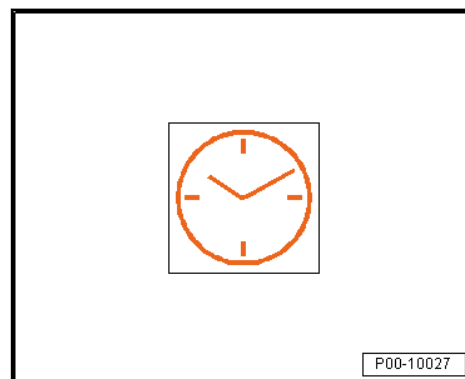
Working time/pot life:

- 48 hours at +20 °C (68 °F)



#### Note

*The working time depends on the ambient temperature. Higher temperatures lead to a shortened pot life. Lower temperatures lead to a longer pot life.*





#### Application type "coat"

- Apply one to two spray applications to cover (each application 30 µm) with a 10 to 15 minute intermediate flash-off time, depending on temperature.

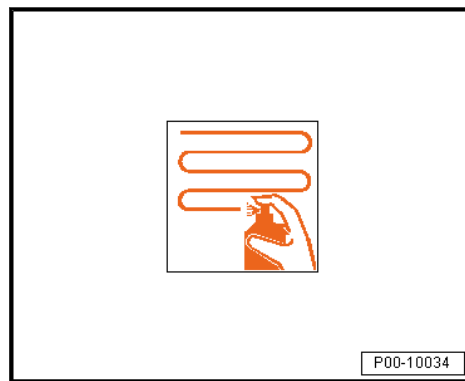
#### Spraying distance:

- Maintain a distance of 20 to 25 cm.



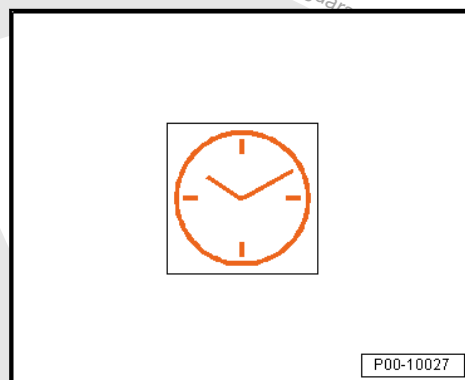
#### Note

*If the spraying procedure is interrupted, make sure that the valve above the spray head is empty to prevent any nozzle blockage.*



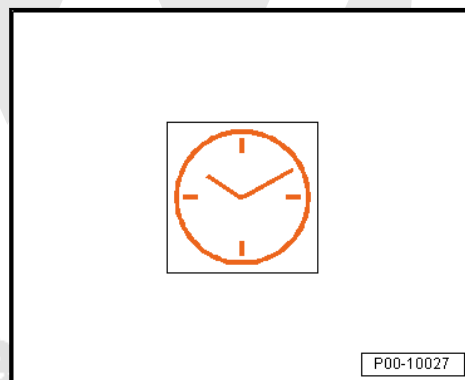
#### Drying

Air drying at +20 °C (68 °F) room temperature is 12 hours.

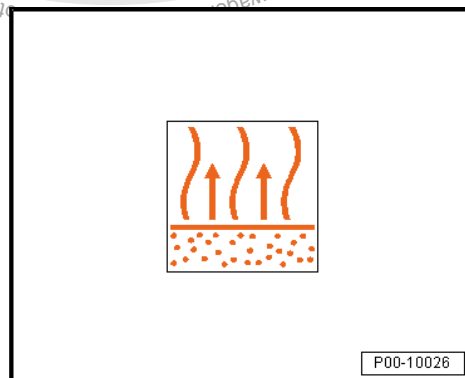


The flash-off time with forced drying is at least 10 to 15 minutes.

Forced drying is at +60 °C (140 °F) object temperature for 35 to 40 minutes.



The flash-off time for IR drying is a minimum of 10 to 15 minutes.





IR drying is recommended.



#### Caution

**For work safety, wear appropriate, personal protective equipment.**

**Note the safety data sheets as well as the warnings on the label of the spray nozzle.**

**Shake briefly again before every subsequent spray application.**

**Dispose of the empty spray cans as recyclable material.**



P00-10028



#### WARNING

- ◆ **Coating materials ready for application which contain isocyanate may cause irritation to mucous membranes (especially the respiratory organs) and cause hypersensitive reactions.**
- ◆ **Sensitization may occur if vapors and spray mist are inhaled.**
- ◆ **Carefully observe all rules for working with coating materials containing solvents when working with coating materials containing isocyanate. Particular care must be taken to prevent inhalation of spray mist and vapor.**
- ◆ **Persons suffering from allergies, asthma or other respiratory problems should not work with coating products containing isocyanate.**

#### Characteristics

Solid content:	33.8 % in relation to thinned paint
Yield:	Approximately 0.5 to 0.75 m <sup>2</sup> /spray can with approximately 30-50 µm dry layer thickness
Gloss level:	High-gloss
VOC value:	668 g (23.6 oz)/L, 258 g (9.1 oz)/can

#### Storage

The guaranteed shelf life is 24 months from production date. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



P00-10050

### 3.17.10 Two-Part Epoxy Primer Filler

#### Definition:

- ◆ Two-Part Epoxy Primer Filler - LLS MAX 220 M1- , beige (250 ml)



- ◆ Two-Part Epoxy Primer Filler - LLS MAX 220 M2- , beige (400 ml)

**Edition 03/2013**

### Product Description

The Two-Part Epoxy Primer Filler - LLS MAX 220 M1/M2- is a two-part epoxy spray can for use with small damaged areas. Do not use in areas vulnerable to stone impact.

The EP primer filler must be protected by the trim panels, body covers, wheel housing liners and UBS material in the underbody area. All difficult to reach areas must be sealed with wax underbody protection.

For work safety, wear appropriate, personal protective equipment.

Characteristics:

- ◆ Can be used in a number of ways
- ◆ Good corrosion protection

### Application Instructions

#### Base surface

Suitable base surfaces:

- ◆ Bare sheet steel, sanded
- ◆ Cleaned and sanded, galvanized/electrolytically zinc sheet steel or soft aluminum
- ◆ Well-sanded old paint or factory paint
- ◆ Original replacement primer, sanded
- ◆ Cleaned and sanded UP-GF surfaces, free of separating agents
- ◆ Surfaces prepared with two-part polyester products and then sanded very fine.

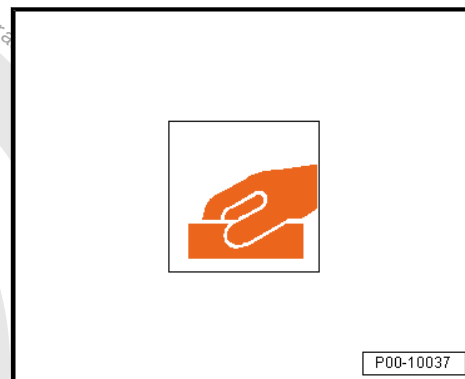
Pre-treatment of base surfaces:

- Carefully clean using Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .





- Then, sand.



- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.

**Caution**

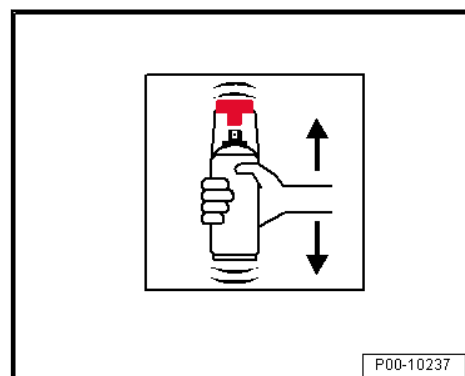
*The Two-Part Epoxy Primer Filler - LLS MAX 220 M1/M2- may not be applied to PVB (acid-hardening) adhesive primers or one-part primers (for example, synthetic resin).*



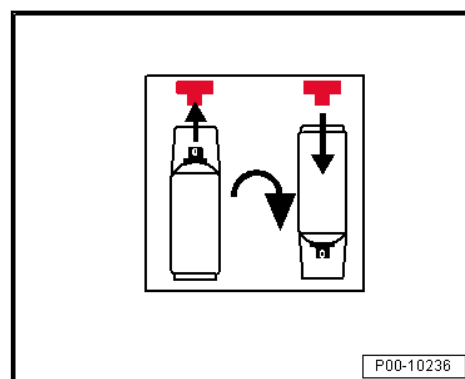
## Processing

### Application:

- Shake before using.

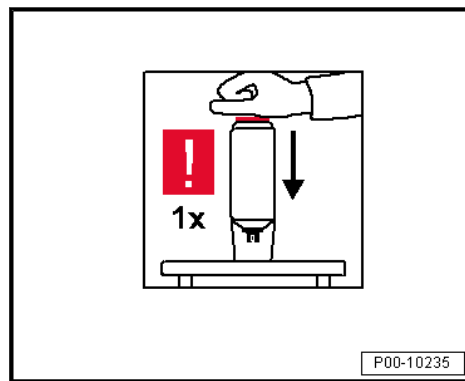


- Remove the red push button on the cap and set it on the valve for the hardener mixture on the bottom of the can.

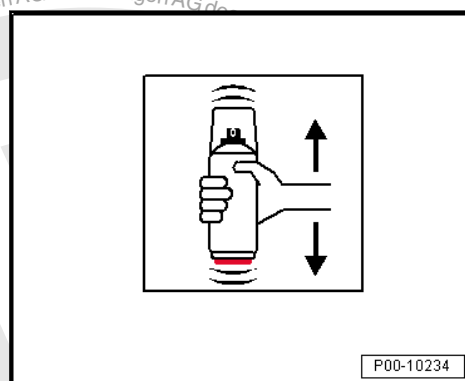




- Press in the valve for the hardener mixture. Make sure when pressing down the valve for the hardener mixture that the can is upside down.

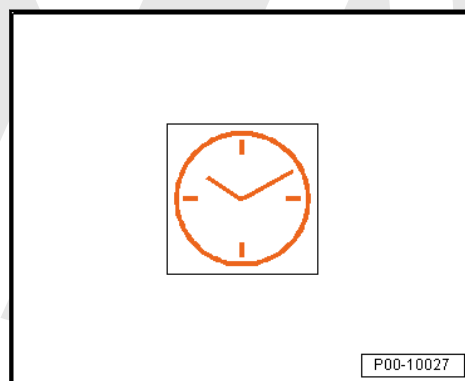


- Shake the can thoroughly for two minutes.



Working time/pot life:

- Eight hours at +20 °C (68 °F)



Application type “coat”

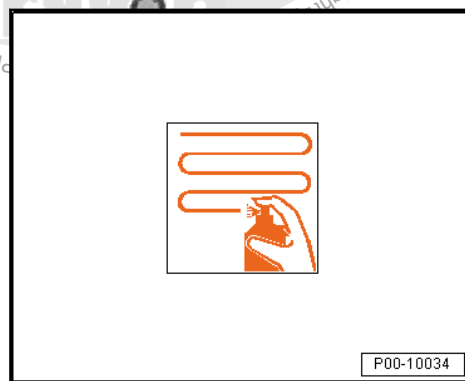
- Apply two to three spray applications with a 5 to 10 minute intermediate flash-off time.

Spraying distance:

- Maintain a distance of 20 to 25 cm.

Reaction Temperature:

- Minimum +15 °C (59 °F).
- The recommended dry layer thickness is between 50 and 70 µm.



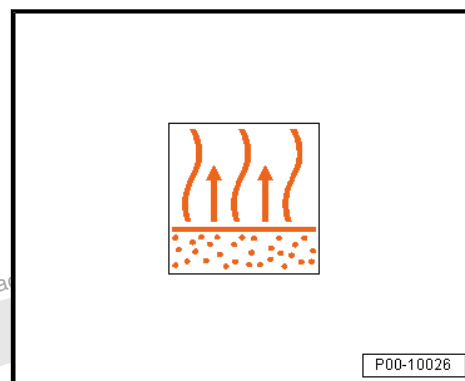
#### Note

*If the spraying procedure is interrupted, make sure that the valve above the spray head is empty to prevent any nozzle blockage.*

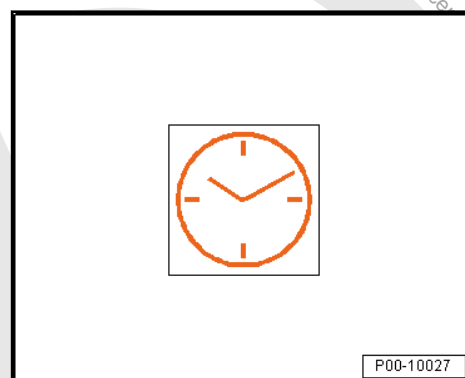


## Drying

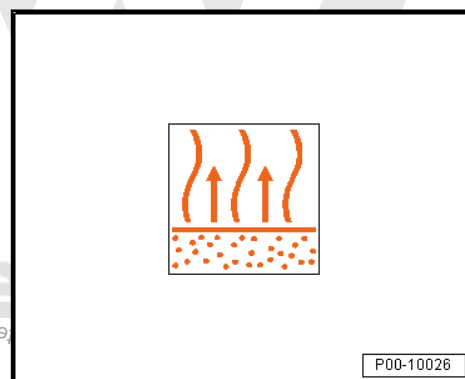
The flash-off time with forced drying is at least 5 to 15 minutes.



Forced drying at +60 to 65 °C (140 to 149 °F) object temperature is 40 to 45 minutes for a layer thickness of 50 to 70 µm.



The flash-off time for IR drying is a minimum of 10 to 20 minutes.



IR drying with a 50 to 70 µm layer thickness is 3 to 5 minutes with a short-wave heater at 50% power and then 15 to 20 minutes at 100% power.





### Further processing

- Dry-sand with rotary sander and dust extraction. P400-500 grit sandpaper



P00-10040

- Wet-sand with P800-1000 grit sandpaper



P00-10041



## Reworking

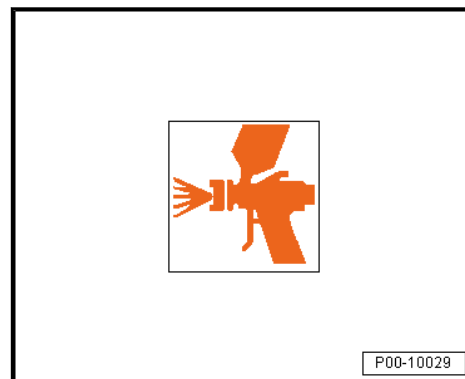
Can be painted over with:

- ◆ Two-part HS top coats
- ◆ Aquaplus water-based base paint and two-part HS clear coat



### Note

- ◆ Any gaps in the base surface can be "filled" in with two-part polyester filler.
- ◆ After drying and intermediate sanding, the filled patches can be re-insulated using Two-Part Epoxy Primer Filler - LLS MAX 220 M1/M2-.



### Caution

**For work safety, wear appropriate, personal protective equipment.**

**Note the safety data sheets as well as the warnings on the label of the spray nozzle.**

**Before processing and activating the hardener cartridge, the can must be shaken for approximately two minutes. Shake briefly again before every subsequent spray application.**

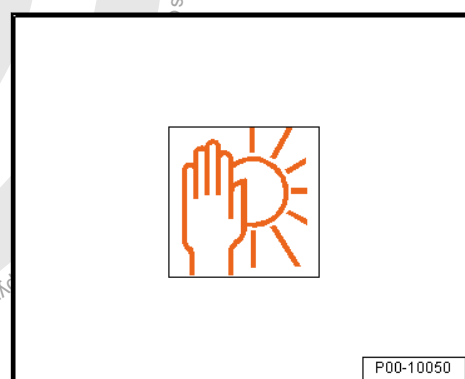
**Dispose of the empty spray cans as recyclable material.**

## Characteristics

VOC value: 2004/42/ IIB(e)(840) 650	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 840 g (29.6 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 650 g (22.9 oz)/L.
--	---

## Storage

The guaranteed shelf life of 36 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



## 3.17.11 Two-Part Wash Primer

### Definition:

- ◆ Two-Part Wash Primer - LLS MAX 230 M1- , olive green (250 ml)



## Edition 12/2013

### Product Description

The Two-Part Wash Primer - LLS MAX 230 M1- is a zinc chromate-free, phenol-free acid-hardening two-part wash primer.

For work safety, wear appropriate, personal protective equipment.

Characteristics:

- ◆ Simple processing properties
- ◆ Passivizing properties provide excellent protection against corrosion.
- ◆ For metallic base surfaces
- ◆ Short waiting period before recoating
- ◆ Long curing time
- ◆ Application area: exclusively for clever repair and minor repairs

### Application Instructions

#### Base surface

Suitable base surfaces:

- ◆ Bare sheet steel, sanded
- ◆ Cleaned and sanded, galvanized/electrolytically zincd sheet steel or soft aluminum
- ◆ Thoroughly sanded old primer or factory primer (excluding thermoplastic coating)
- ◆ Surfaces prepared with two-part polyester products and then sanded very fine.



#### Note

*Because of the wide variety of alloys and manufacturing processes for metals, the base surface must first be tested to ensure that the pre-treatment provides sufficient adhesion.*

Pre-treatment of base surfaces:

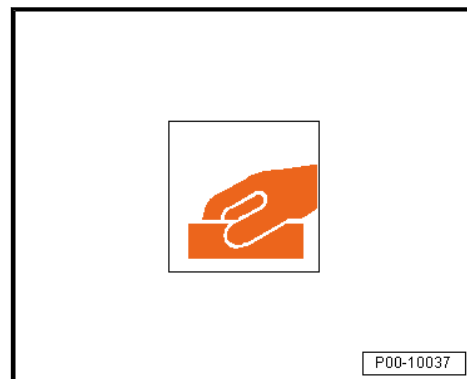
- Carefully clean using Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .



P00-10038



- Clean and sand factory or old paint, eliminate any potential rust areas, and sand transitions to old paint.



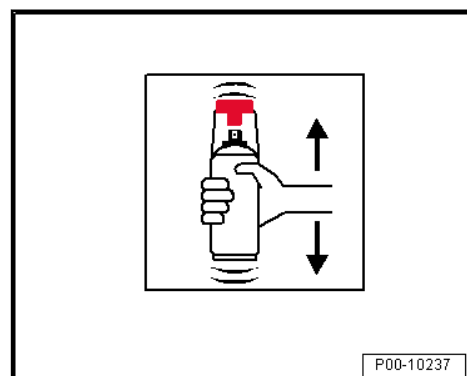
- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.



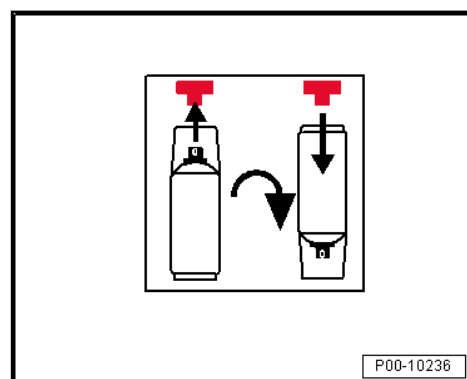
## Processing

### Application:

- Shake the spray can thoroughly before activating the hardener in order to ensure proper mixing.

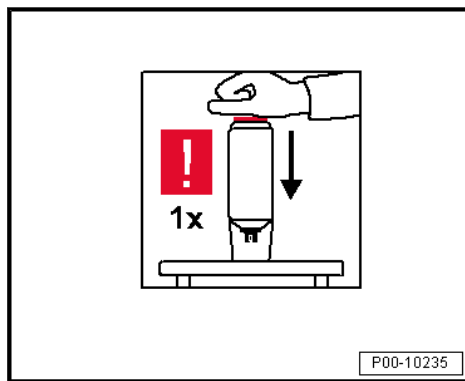


Remove the red push button on the cap and set it on the valve for the hardener mixture on the bottom of the can.

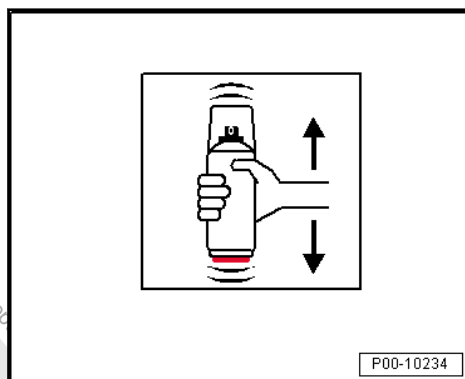




- Press in the valve for the hardener mixture. Make sure when pressing down the valve for the hardener mixture that the can is upside down.

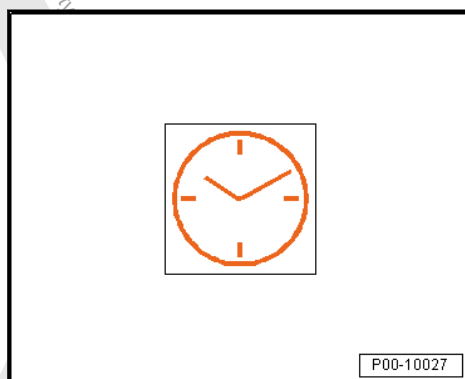


- Shake the can thoroughly for two minutes.



Working time/pot life:

- Four days at +20 °C (68 °F)



Application type “coat”

- Apply two spray applications with a 5 to 10 minute intermediate flash-off time.

Spraying distance:

- Maintain a distance of 15 to 20 cm.

Reaction Temperature:

- Minimum +15 °C (59 °F).
- The recommended dry layer thickness is 8 to 12 µm.



#### Note

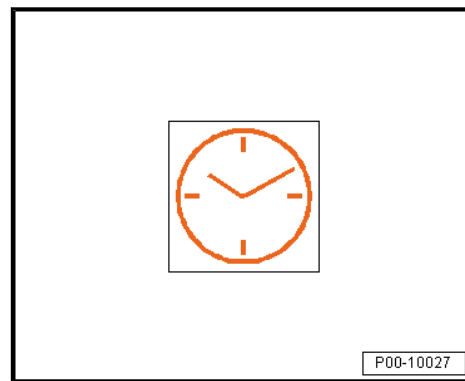
*If the spraying procedure is interrupted, make sure that the valve above the spray head is empty to prevent any nozzle blockage.*



## Drying

Air dry at +20 °C (68 °F) room temperature:

- ◆ Can be painted over after 20 to 30 minutes



## Reworking

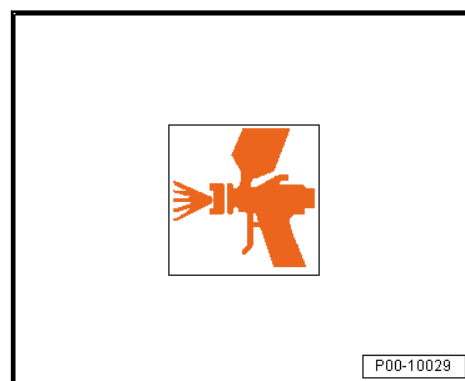
Can be painted over with:

- ◆ Two-Part HS Filler



### Note

- ◆ *The product can only be used underneath two-part HS filler in the three-layer structure.*
- ◆ *Do not rework with polyester products, epoxy products or water soluble products.*
- ◆ *Do not apply to thermoplastic coatings.*
- ◆ *Do not rework directly with water-based base paint or two-part top coat.*



### Caution

**For work safety, wear appropriate, personal protective equipment.**

**Note the safety data sheets as well as the warnings on the label of the spray nozzle.**

**Before processing and activating the hardener cartridge, the can must be shaken for approximately two minutes. Shake briefly again before every subsequent spray application.**

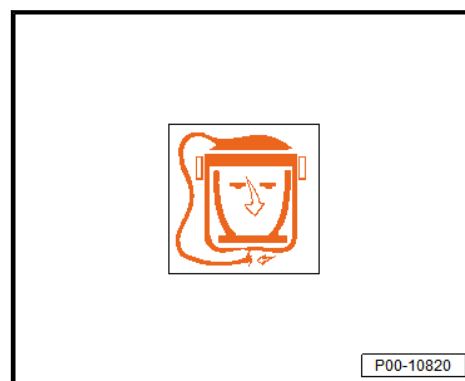
**Dispose of the empty spray cans as recyclable material.**

## Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

## Characteristics

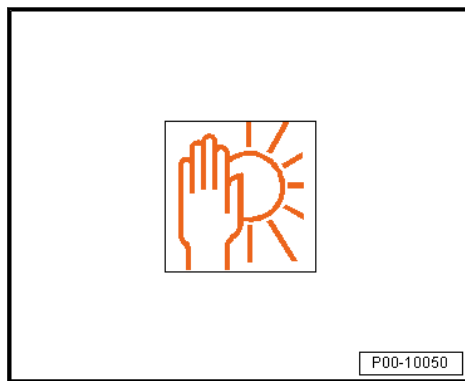
VOC value: 2004/42/IIIB (e) (840) 703	The EU limit for this product (product category IIB.b) in ready-to-use form is a maximum of 840 g (29.6 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 703 g (24.8 oz)/L.
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## Storage

The guaranteed shelf life of 36 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



## 3.17.12 Silicone Remover - LLS MAX 007-

### Definition:

- ◆ Silicone Remover - LLS MAX 007-

Edition 10/2008

### Product Description

The Silicone Remover - LLS MAX 007- is a water-based, reduced-solvent cleaning agent that is rich in active ingredients. The raw material base has specific solvent combinations.

### Characteristics:

- ◆ Application-oriented product-specific aerosol formulation
- ◆ Constant atomizing pressure
- ◆ Aerosol distribution
- ◆ Highest yield
- ◆ Professional painting result
- ◆ Highly effective cleaning- and degreasing agent
- ◆ Strengthens the adhesion
- ◆ Highest yield
- ◆ Even distribution

### Application Instructions

#### Application

Recommended for:

- ◆ Parts painting and spot repair aid
- ◆ Best suited for use during the subsequent painting of Aqua Plus water-based paints

Suitable base surfaces:

- ◆ Primed, filled metal, plastic, glass, old- and factory paint surfaces, painted and unpainted base surfaces

Base surface	Suitability
Primed, filled surfaces	+++
Factory and old paint	+++
Plastic parts	+++
Metal/glass	+++

### Characteristics:

- ◆ Painted surfaces do not become corroded





- ◆ Removes all types of silicone, an ideal dirt and soot cleaner
- ◆ Removes cavity sealant or wax
- ◆ Removes gummy, dried-on grease residue, for example door hinges
- ◆ Removes oil and grease residue
- ◆ Ideal solvent for tar marks
- ◆ Removes adhesive residue, for example stickers

#### Processing



#### Note

- ◆ *For work safety, wear appropriate, personal protective equipment:*
- ◆ *Breathing mask type: A2/P2*
- ◆ *Latex or nitrile protective gloves, for example*

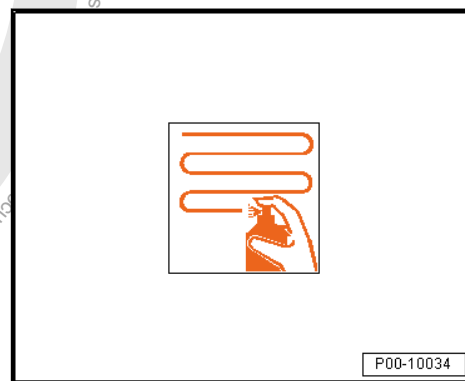
#### Application type "coat"

- Apply a light coating immediately before applying the subsequent paint layer and right away wipe dry with a clean and dry cloth.
- Do not allow the silicone remover to evaporate off the surface. Only work on small areas at the same time.
- Repeat the cleaning procedure if the surface is very dirty.
- Replace the cloths a few times. Do not use any dirty cloths.



#### Note

*If the spray application is interrupted, make sure that the valve above the spray head is empty.*



#### Caution

***For work safety, wear appropriate, personal protective equipment.***

***Note the safety data sheets as well as the warnings on the label of the spray nozzle.***

***Dispose of the empty spray cans as recyclable material.***

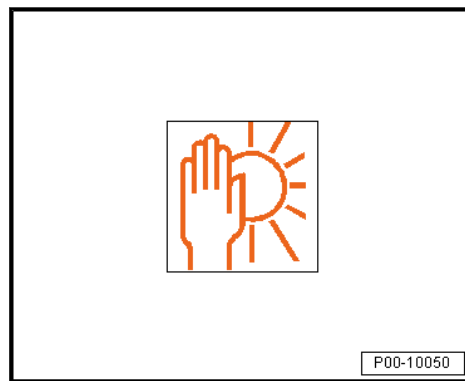
#### Characteristics

Solid content:	0 %
Yield:	Approximately 0.75 to 1.0 m <sup>2</sup> / spray can
Gloss level:	Not applicable
VOC value:	620 g (21.9 oz)/L, 248 g (8.7 oz)/can



## Storage

The guaranteed shelf life of 36 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



## 3.17.13 Silicone Remover, Long - LLS MAX 008-

### Definition:

- ◆ Silicone Remover, Long - LLS MAX 008-

Edition 10/2008

### Product Description

The Silicone Remover, Long - LLS MAX 008- is a cleaning agent that is rich in active ingredients, is easy to apply and evaporates leaving no residue. The raw material base has specific solvent combinations.

### Characteristics:

- ◆ Application-oriented product-specific aerosol formulation
- ◆ Constant atomizing pressure
- ◆ Aerosol distribution
- ◆ Highest yield
- ◆ Professional painting result
- ◆ Easy to process
- ◆ Evaporates leaving no residue
- ◆ Removes silicone, grease, oil, wax, dirt, tar and soot
- ◆ Contains a mild, nonaggressive cleaning solution

### Application Instructions

#### Application

Recommended for:

- ◆ Parts painting and spot repair aid

Suitable base surfaces:

- ◆ Primed, filled metal, plastic, glass, old- and factory paint surfaces, painted and unpainted base surfaces

Base surface	Suitability
Primed, filled surfaces	+++
Factory and old paint	+++
Plastic parts	+++
Metal/glass	+++

### Characteristics:

- ◆ Painted surfaces do not become corroded



- ◆ Removes all types of silicone, an ideal dirt and soot cleaner
- ◆ Removes cavity sealant or wax
- ◆ Removes gummy, dried-on grease residue, for example door hinges
- ◆ Removes oil and grease residue
- ◆ Ideal solvent for tar marks
- ◆ Removes adhesive residue, for example stickers

#### Processing



#### Note

- ◆ *For work safety, wear appropriate, personal protective equipment:*
- ◆ *Breathing mask type: A2/P2*
- ◆ *Latex or nitrile protective gloves, for example*

#### Application type "coat"

- Apply a light coat and wipe with a clean, dry fleece cloth.
- Allow to evaporate from the cleaned surfaces fully.
- Repeat the cleaning procedure if the surface is very dirty.
- Replace the cloths a few times. Do not use any dirty cloths.



#### Note

*If the spray application is interrupted, make sure that the valve above the spray head is empty.*



#### Caution

***For work safety, wear appropriate, personal protective equipment.***

***Note the safety data sheets as well as the warnings on the label of the spray nozzle.***

***Dispose of the empty spray cans as recyclable material.***

#### Characteristics

Solid content:	0 %
Yield:	Approximately 0.75 to 1.0 m <sup>2</sup> / spray can
Gloss level:	Not applicable
VOC value:	620 g (21.9 oz)/L, 248 g (8.7 oz)/can



## Storage

The guaranteed shelf life of 36 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



P00-10050

## 3.17.14 Blender

### Definition:

- ◆ Blender - LLS MAX 009-

Edition 10/2008

### Product Description

The Blender - LLS MAX 009- matches the overlapping areas or the edges from the existing paint to the new paint for proper vehicle spot painting. The raw material base has specific resin and solvent combinations.

### Characteristics:

- ◆ Application-oriented product-specific aerosol formulation
- ◆ Constant atomizing pressure
- ◆ Aerosol distribution
- ◆ Professional painting result
- ◆ Ideal for spot repair
- ◆ Easy, time-saving processing
- ◆ Especially suitable for touch-up repairs with two layer finishes and two-part one-coat finishes
- ◆ Exceptional etching ability
- ◆ Polishes well
- ◆ Produces seamless edges on touch-up surfaces

### Application Instructions

#### Application

Recommended for:

- ◆ Spot repairs and touch-ups

Suitable base surfaces:

- ◆ Immediately apply after spraying the Two-Part Clear Coat - LLS MAX 210- or two-part top coat onto the overlapping areas on the touch-up surface.
- ◆ The base surface in the tapering off/overlapping areas should be sufficiently matted with a sanding pad (P2000-P4000).

Pretreatment:

- ◆ No special tasks are necessary immediately before apply the blender.



## Processing



### Note

- ◆ *For work safety, wear appropriate, personal protective equipment:*
- ◆ *Breathing mask type: A2/P2*
- ◆ *Latex or nitrile protective gloves, for example*

### Application type "coat"

- In several spray applications, spray onto the spray mist of either the two-part clear coat or two-part top coat until a uniform transition forms.
- The two-part clear coat or two-part top coat do not require a flash-off time.



### Note

*If the spray application is interrupted, make sure that the valve above the spray head is empty.*



### Caution

*For work safety, wear appropriate, personal protective equipment.*

*Note the safety data sheets as well as the warnings on the label of the spray nozzle.*

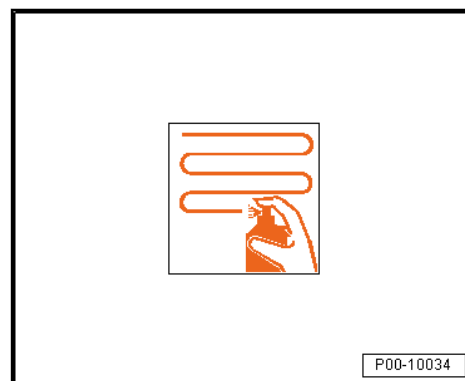
*Dispose of the empty spray cans as recyclable material.*

### Characteristics

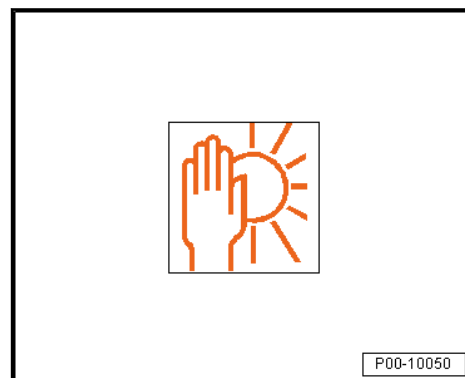
Solid content:	4.8 %
Yield:	Approximately 0.5 m <sup>2</sup> / spray can
Gloss level:	Not applicable
VOC value:	766 g (27 oz)/L, 306 g (10.8 oz)/can

### Storage

The guaranteed shelf life of 36 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



P00-10034



P00-10050



## 3.18 Additional Materials

⇒ ["3.18.1 Matting Component ALN 775 106 ", page 366](#)

⇒ ["3.18.2 Matting Component LVM 769 810 A2 ", page 371](#)

⇒ ["3.18.3 Structuring Component", page 374](#)

⇒ ["3.18.4 Aquaplast Touch-Up Additive", page 379](#)

⇒ ["3.18.5 Aqua Premium System Additive", page 380](#)

### 3.18.1 Matting Component - ALN 775 106-

#### Definition:

- ◆ Matting Component - ALN 775 106-

Edition 04/2013

#### Product Description

With the two-part HS top coat, the Matting Component - ALN 775 106- produces a matted top coat coating for plastic finishes.

#### Application Instructions

##### Base surface

Suitable base surfaces:

- ◆ Hardened, well-preserved and sanded old paint or factory paints
- ◆ Plastic parts treated with primer or filler



#### Note

*For information about plastic parts, refer to "The VW/Audi Coating System for Plastic Parts" (Data Sheet 5.74).*

Pre-treatment of base surfaces:

- Carefully clean using Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .

- Then, sand.



P00-10038



P00-10037

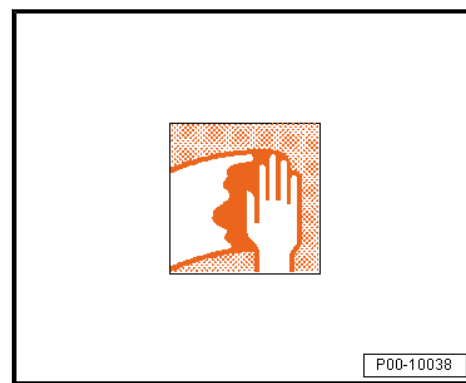


- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.

## Processing

Applicable products:

- ◆ Two-part HS top coat
- ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5-
- ◆ Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3-
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-
- ◆ See technical application information for the two-part VHS hardener. Refer to ➔ ["3.9.2 Two-Part VHS Hardener and Two-Part VHS Performance Hardener", page 258](#) .



Matting Table:

Mixing Ratio (in % by weight)		Gloss Units (GU) according to DIN 67530
Matting Component - ALN 775 106-	Two-Part HS Top Coat	60° angle
10	90	85-95 GU*
20	80	80-90 GU*
30	70	75-90 GU*
40	60	60-90 GU*
50	50	25-65 GU*

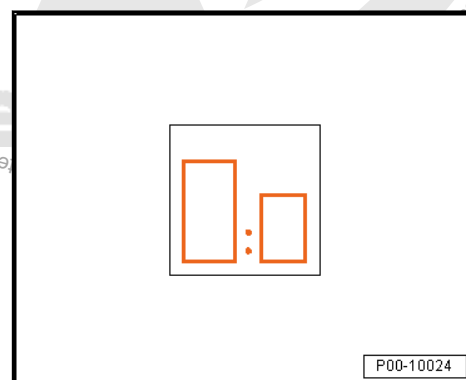
\* Depending on color; bright colors usually tend to lose more gloss than darker colors when adding Matting Component - ALN 775 106- . Other factors influence the gloss level. Refer to the gloss level influencing factors table.

## Mixing ratio

Combining the Matting Mixture:

Mixing ratio 4:1 by volume with:

- ◆ Two-Part VHS Hardener - LHA 009 051 A2- / -LVM 009 051 A5- (for small to medium-sized surfaces, at moderate temperatures)
- ◆ Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3- (for larger surfaces at moderate temperatures)
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2- (for large surfaces and high temperatures)
- ◆ See technical application information for the two-part VHS hardener. Refer to ➔ ["3.9.2 Two-Part VHS Hardener and Two-Part VHS Performance Hardener", page 258](#) .



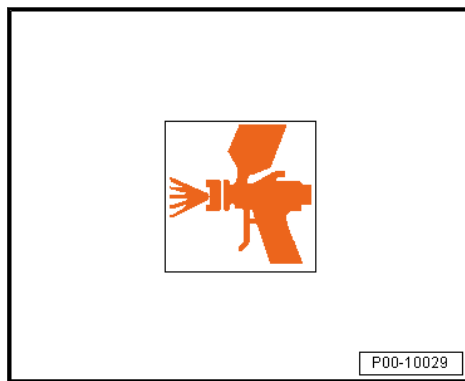
Dilutable with:

- ◆ Two-Part Thinner - LVE 009 001 A5-
- ◆ Two-Part Thinner, Special - LVM 009 200 A2/A5-
- ◆ Two-Part Thinner, Long - LVM 009 300 A2-



Working time/pot life:

- Ready to spray in 60 to 90 minutes at +20 °C (68 °F)



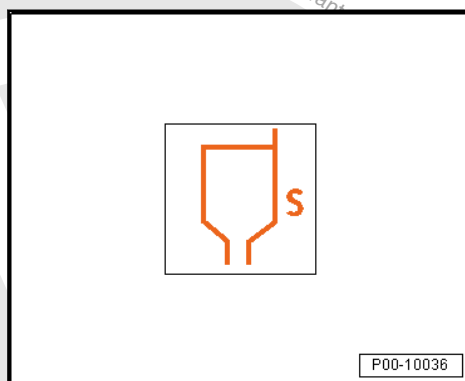
Application type “coat”



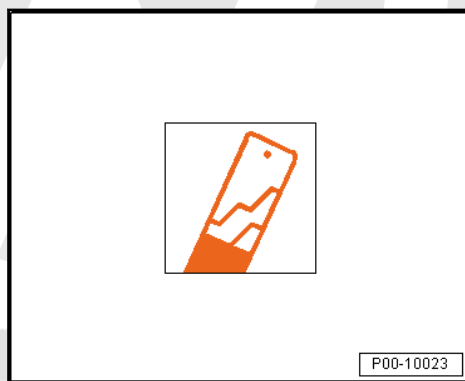
- Processing viscosity at +20 °C (68 °F) material temperature

Processing viscosity “Compliant” and “HVLP”:

18 to 20 Seconds



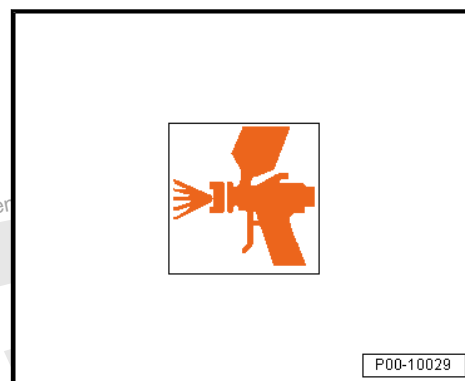
- Adding 15 % thinner at +20 °C (68 °F) material temperature







- Set the spray nozzle (see manufacturer's information):  
"Compliant" 1.3 to 1.4 mm.
- Set the spray nozzle (see manufacturer's information):  
"HVLP" 1.3 to 1.4 mm.
- Set the spray pressure (see manufacturer's information):  
"Compliant" to 2.0 to 2.5 bar (29.01 to 36.26 psi).
- Set the atomizing pressure (see manufacturer's information):  
"HVLP" 0.7 bar (10.15 psi).



- Two spray applications are required with flash-off time to get a dry layer thickness of between 50 and 60 µm.



#### Note

- ◆ *The addition of Two-Part Elastic Additive - ALZ 011 001- is omitted.*
- ◆ *The Matting Component - ALN 775 106- is not suitable for matting clear coats.*
- ◆ *Matting Component - ALN 775 106- is thixotropically mixed, which means it becomes fluid when strongly stirred. If necessary, it is recommended to use an agitator or manually shake the can. It should also be mixed in the mixer 15 minutes before using.*
- ◆ *Adding the matting compound can influence the covering capacity.*
- ◆ *Apart from color-dependent differences, the actual gloss level is influenced by different factors. In the following comparison, various additional parameters and their effect on the gloss levels are represented.*



higher gloss level	lower gloss level
Longer hardener	Shorter hardener
longer thinner	shorter thinner
higher processing viscosity	lower processing viscosity
higher dry layer thickness	lower dry layer thickness
shorter flash-off time	longer flash-off time
forced drying	air drying

#### Influencing Factors on the Gloss Level:

- ◆ Using different hardeners, thinners, application types, drying conditions and layer thicknesses lead to different gloss levels (up to 20%).

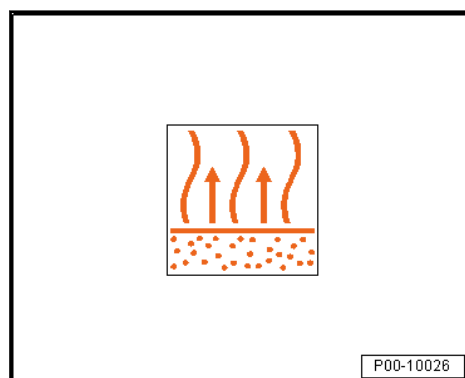
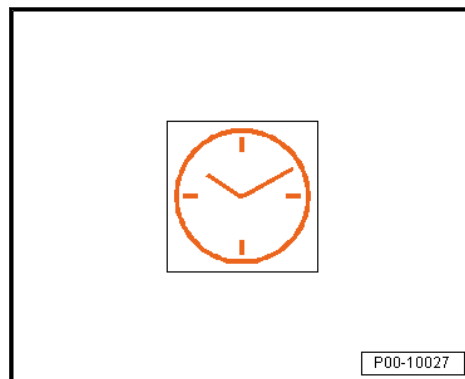


## Drying

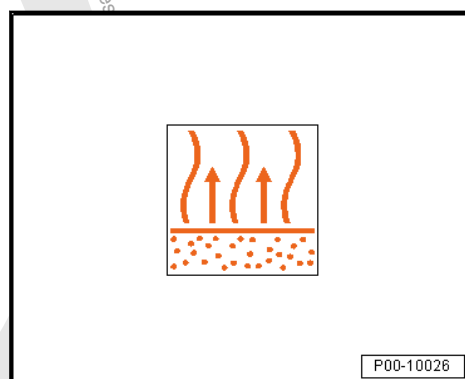
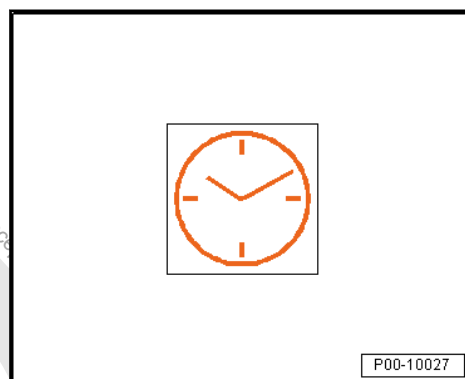
Air dry at +20 °C (68 °F) room temperature:

- ◆ Dust dry after 30 to 50 minutes
- ◆ Ready for assembly after 5 to 6 hours
- ◆ Dry overnight

Final flash-off time with forced drying is a minimum of 5 to 10 minutes.



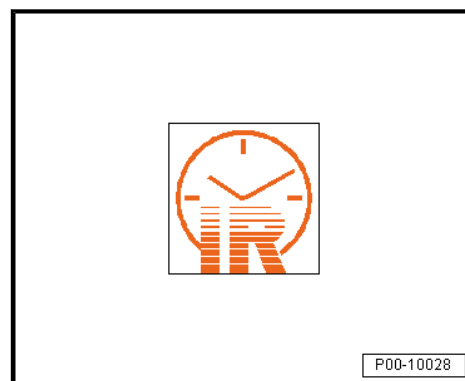
Forced dry at +60 °C (140 °F) object temperature for 30 to 40 minutes



Final flash-off time for IR drying is a minimum of 5 to 10 minutes.



IR dry with short-wave radiator for 5 minutes at 50 % power and for 10 minutes at 100 % power

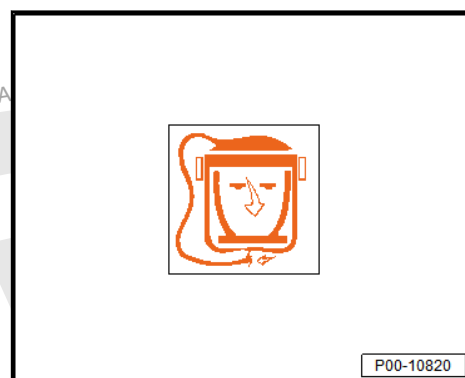


#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

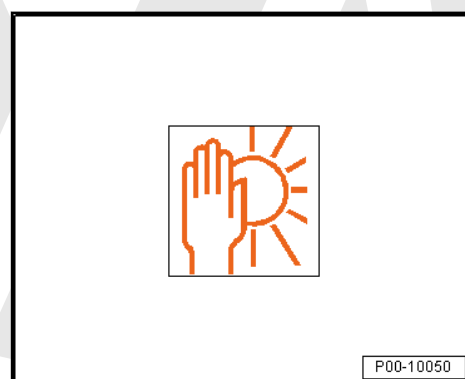
#### Characteristics

Delivery Viscosity	Pasty
Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/ IIB(e) (840) 600	The EU limit for this product (product category IIB.e) in ready-to-use form is a maximum of 840 g (29.6 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 600 g (21.2 oz)/L.



#### Storage

The guaranteed shelf life of 48 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



### 3.18.2 Matting Component - LVM 769 810 A2-

#### Definition:

- ◆ Matting Component - LVM 769 810 A2-

Edition 10/2014

#### Product Description

With two-part HS clear coats and two-part HS top coat, the Matting Component - LVM 769 810 A2- creates a matted top coat coating for metal and plastic finishes.

Areas of application include large surfaces/complete painting as well as small- and attachment parts.

#### Application Instructions

##### Base surface

Suitable base surfaces:



- ◆ Hardened, well-preserved and sanded old paint or factory paints
- ◆ Primed and filled metal- and plastic parts



#### Note

For information about plastic parts, refer to "The VW/Audi Coating System for Plastic Parts" (Data Sheet 5.74).

### Processing

Applicable products:

- ◆ Two-Part HS Clear Coat - L2K 769 500 A5-
- ◆ Two-Part HS Vario Clear Coat - L2K 769 K01 A5-
- ◆ Two-Part HS Optimum Plus Clear Coat - LZK 769 K07 A5-
- ◆ Two-Part HS Brilliant Plus Clear Coat - LZK 769 K05 A5-
- ◆ Two-Part HS Performance Clear Coat - LZK 769 K06 A5-
- ◆ Two-Part HS Mixed Paint/Top Coat - L2K 074/073...-
- ◆ Two-Part HS Hardener, Long - LHA 009 047 A3-
- ◆ Two-Part HS Hardener, Extra Long - LHA 009 048 A3-
- ◆ Two-Part VHS Hardener, Long - LHA 009 052 A2- / -LHA 009 052 A3-
- ◆ Two-Part VHS Hardener, Extra Long - LHA 009 053 A2-
- ◆ For hardener, refer to the technical application instructions here Refer to ➔ ["3.9 Hardener", page 254](#) .
- ◆ Two-Part Thinner - LVE 009 001 A5-
- ◆ Two-Part Thinner, Long - LVM 009 300 A2-
- ◆ Two-Part Thinner, Special - LVM 009 200 A2- / -LVM 009 200 A5-
- ◆ Clear Coat Additive LVM 007 000 A2-

### Gloss Level Adjustment/Matting and Application Instructions



#### Note

Refer to "Gloss Level Adjustment" (5.75) and "Repair Paint Systems For Matte Painted Vehicles" (5.76).



## Application Instructions



### Note

- ◆ *The addition of Two-Part Elastic Additive - ALZ 011 001- is omitted.*
- ◆ *Stir or shake the Matting Component - LVM 769 810 A2- in the can well.*
- ◆ *With the two-part HS clear coat and two-part HS top coat, mix the Matting Component - LVM 769 810 A2- according to specification and infuse with hardener and thinner just before processing. The processing of the ready-to spray mixture should immediately follow. If the mixture remains in the mixing- or spray gun receptacle for a longer period of time (15 minutes), it should be stirred again before continuing to use (separation).*
- ◆ *Adding the matting compound can influence the covering capacity.*
- ◆ *It is absolutely necessary to test the respective mixture on sheet metal to achieve the appropriate gloss level for the vehicle. Gloss level measurements (60° angle) at adjacent parts can also be helpful.*
- ◆ *A touch-up/repair of the matted clear coat within the surface (for example, side part or clever repair) is not possible.*
- ◆ *Dust inclusions cannot be polished out, so therefore ensure that absolute cleanliness is maintained during the entire painting process.*
- ◆ *Apart from color-dependent differences, the actual gloss level is influenced by different factors. In the following comparison, various additional parameters and their effect on the gloss levels are represented.*

higher gloss level	lower gloss level
Shorter hardener	Longer hardener
shorter thinner	longer thinner
higher processing viscosity	lower processing viscosity
higher dry layer thickness	lower dry layer thickness
shorter flash-off time	longer flash-off time
forced drying	air drying

### Influencing Factors on the Gloss Level:

- ◆ *Using different hardeners, thinners, application types, drying conditions and layer thicknesses lead to different gloss levels (up to 20%).*



## Drying

Final flash-off time with forced drying is a minimum of 15 to 20 minutes

Forced drying at +60 to 65 °C (140 to 149 °F) object temperature for 45 minutes

### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

### Characteristics

Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/ IIB(e) (840) 600	The EU limit for this product (product category IIB.e) in ready-to-use form is a maximum of 840 g (29.6 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 600 g (21.2 oz)/L.

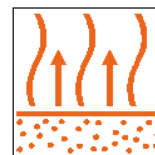
## Storage

The guaranteed shelf life of 48 months from date of manufacture. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).

## 3.18.3 Structuring Component

### Definition:

- ◆ Structuring Component, Fine - ALN 775 108-



P00-10026



P00-10027



P00-10820



P00-10050



Edition 04/2013

## Product Description

The Structuring Component, Fine - ALN 775 108- is a component for the two-part HS top coat and changes it into a textured paint.

The top coat can be used for plastic finishes on vehicles.

## Application Instructions

### Base surface

Suitable base surfaces:

- ◆ Hardened, well-preserved and sanded old paint or factory paints
- ◆ Plastic parts treated with primer or filler



### Note

*For information about plastic parts, refer to "The VW/Audi Coating System for Plastic Parts" (Data Sheet 5.74).*

Pre-treatment of base surfaces:

- Carefully clean using Silicone Remover - LVM 020 000 A5- or Silicone Remover, Long - LVM 020 100 A5- .

- Dry-sand with rotary sander and dust extraction (P 400 to 500 grit).



P00-10038



P00-10040



- Or wet-sand with P 800 grit sandpaper



P00-10041

- Use a suitable cleaning agent before reworking to ensure a clean and residue-free surface.

### Processing



P00-10038

### Mixing ratio

Mixing ratio 1:1 by volume with two-part HS top coat:

- Afterwards combine this mixture 4:1 by volume with a suitable two-part VHS hardener.

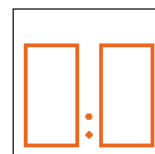
See technical application information two-part VHS hardener.  
Refer to ➤ [“3.9.2 Two-Part VHS Hardener and Two-Part VHS Performance Hardener”, page 258](#) .

Dilutable with:

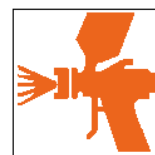
- ◆ Two-Part Thinner, Special - LVM 009 200 A2/A5-
- ◆ Two-Part Thinner, Long - LVM 009 300 A2-

Working time/pot life:

- Ready to spray in 90-100 minutes at +20 °C (68 °F)



P00-10084



P00-10029





Application type "coat"

- Processing viscosity 4 mm for +20 °C (68 °F), German Industry Standardization 53211
- Processing viscosity at +20 °C (68 °F) material temperature is the mixing viscosity for "Compliant" and "HVLP".

- Adding 15 % thinner at +20 °C (68 °F) material temperature

- Set the spray nozzle (see manufacturer's information): "Compliant" 1.3 to 1.4 mm.
- Set spray nozzle (see manufacturer's information): "HVLP" 1.3 to 1.5 mm.
- Set the spray pressure (see manufacturer's information): "Compliant" to 2.0 to 2.5 bar (29.01 to 36.26 psi).
- Set the atomizing pressure (see manufacturer's information): "HVLP" 0.7 bar (10.15 psi).



P00-10032



P00-10036



P00-10023



P00-10029



- Two spray applications are required with flash-off time (5 to 10 minutes) to get a dry layer thickness of between 50 and 60 µm.



#### Note

- ◆ The addition of Two-Part Elastic Additive - ALZ 011 001- is omitted.
- ◆ Structuring Component, Fine - ALN 775 108- is only suitable for use on attachments (for example, bumpers, spoilers).
- ◆ Various effects can be created using different spraying techniques and layer thicknesses.
- ◆ Structuring Component, Fine - ALN 775 108- is thixotropically mixed, which means it becomes fluid when stirred.

#### Drying

Air dry at +20 °C (68 °F) room temperature:

- ◆ Dust dry after 30 to 50 minutes
- ◆ Ready for assembly after four to six hours
- ◆ Dry overnight

Final flash-off time with forced drying is a minimum of 5 to 10 minutes.

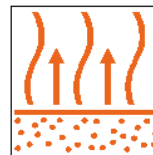
Forced dry at +60 °C (140 °F) object temperature for 30 to 40 minutes



P00-10032



P00-10027



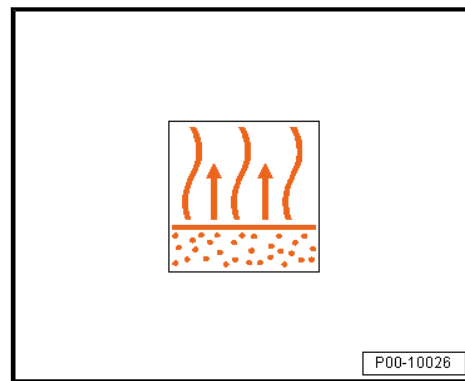
P00-10026



P00-10027



Final flash-off time for IR drying is five minutes.



IR dry with a short-wave radiator for 10 to 15 minutes and with a medium-wave radiator for 15 to 20 minutes.



#### Personal Protective Equipment:

- ◆ Note the safety data sheets
- ◆ Wear the personal protective equipment during application

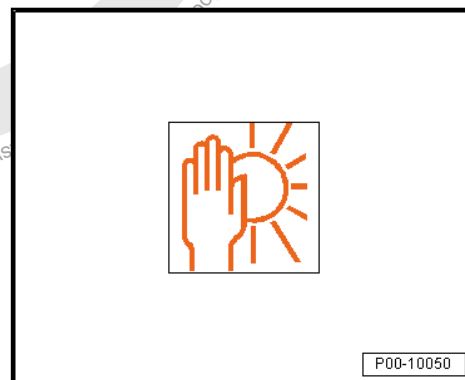
#### Characteristics

Delivery Viscosity	Thixotropic
Flashpoint:	above +23 °C (73.4 °F)
VOC value: 2004/42/ IIB(e) (840) 600	The EU limit for this product (product category IIB.e) in ready-to-use form is a maximum of 840 g (29.6 oz)/L volatile organic compounds. The VOC-value of this product in ready-to-use form is a maximum of 600 g (21.2 oz)/L.



#### Storage

The guaranteed shelf life is 24 months from production date. Use no later than the date indicated on the label and store in the closed original container at +20 °C (68 °F).



### 3.18.4 Aquaplast Touch-Up Additive

#### Definition:

- ◆ Touch-Up Additive for Aquaplast - LVM 030 000 A2-



#### Note

*The usage and application instructions for the Touch-Up Additive for Aquaplus - LVM 030 000 A2- is described here Refer to ⇒ ["3.7.4 Aquaplus Touch-Up System", page 180](#).*

### 3.18.5 Aqua Premium System Additive

#### Definition:

- ◆ Additive for Aqua Premium - LVM 035 200 A2/A3-
- ◆ Additive for Aqua Premium - LVM 035 300 A1-
- ◆ Additive for Aqua Premium - LVM 035 300 A1/A3- / Additive for Aqua Premium - LVM 035 301 A3-



#### Note

*The use and application instructions for the additives for aqua premium are described in the appropriate base component. Refer to ⇒ ["3.7.5 Aqua Premium System", page 184](#).*







## 4 Workshop Equipment

⇒ ["4.1 Tools", page 382](#)

⇒ ["4.2 Dust Cloths", page 394](#)

### 4.1 Tools

⇒ ["4.1.1 Spray Can Filling Device VAS 6425 ", page 382](#)

⇒ ["4.1.2 Paint Thickness Tester VAS 6272 ", page 383](#)

⇒ ["4.1.3 Paint Thickness Tester VAS 6197 ", page 383](#)

⇒ ["4.1.4 Paint Thickness Tester VAS 5278 ", page 383](#)

⇒ ["4.1.5 Stone Chip Tester VAS 5102A ", page 385](#)

⇒ ["4.1.6 Pneumatic Brush Grinder Set VAS 6446A ", page 386](#)

⇒ ["4.1.7 Brush Grinder Set VAS 6776 ", page 387](#)

⇒ ["4.1.8 Suction Feed Spray Gun V.A.G 1538 ", page 388](#)

⇒ ["4.1.9 Infrared Dryer VAS 6873 ", page 389](#)

⇒ ["4.1.10 Stand VAS 6873/1 ", page 389](#)

⇒ ["4.1.11 Infrared Dryer VAS 6874 ", page 390](#)

⇒ ["4.1.12 Infrared Dryer VAS 6875 ", page 390](#)

⇒ ["4.1.13 Infrared Dryer VAS 6876 ", page 391](#)

⇒ ["4.1.14 Infrared Dryer VAS 6877 ", page 392](#)

⇒ ["4.1.15 Infrared Dryer VAS 6878 ", page 393](#)

⇒ ["4.1.16 Infrared Heater VAS 6879 ", page 394](#)

#### 4.1.1 Spray Can Filling Device - VAS 6425-

##### Definition:

- ◆ Spray Can Filling Device - VAS 6425-

##### Product Description

The spray can filling device is a pneumatic, maintenance-free dispensing device for filling spray cans with mixed base paint and top coats. The device is suited for filling One-Part Clean Spray Cans - LLS MAX 100- , which can be ordered via the ⇒ Electronic Parts Catalog (ETKA) .

##### Dimension

- ◆ Diameter: 132 mm
- ◆ Height: 366 mm
- ◆ Door height: 123 mm
- ◆ Filling cylinder: diameter 135 mm, height 65 mm, maximum filling volume 100 ml
- ◆ Attachment plate dimensions: 250 x 250 x 2 mm

##### Technical Data

- ◆ Pneumatic filling principle
- ◆ Filling pressure: 8-10 bar (116.03-145.04 psi)/100-130 psi
- ◆ Rupture point: approximately 60 bar (870.23 psi)/ca. 870 psi
- ◆ Operating temperature: +5 °C to +50 °C (41 °F to 122 °F)
- ◆ Gross weight: 4.23 kg (9.33 lbs)





- ◆ Net weight: 4.00 kg (8.82 lbs)

#### **Delivery contents:**

- ◆ Spray can filling device and metal cylinder
- ◆ Compressed air hose and attachment coupling
- ◆ Fastening screw and washer
- ◆ Base plate
- ◆ Adapter for 250 ml cans

### **4.1.2 Paint Thickness Tester - VAS 6272-**

#### **Definition:**

- ◆ Paint Thickness Tester - VAS 6272-

#### **Product Description**

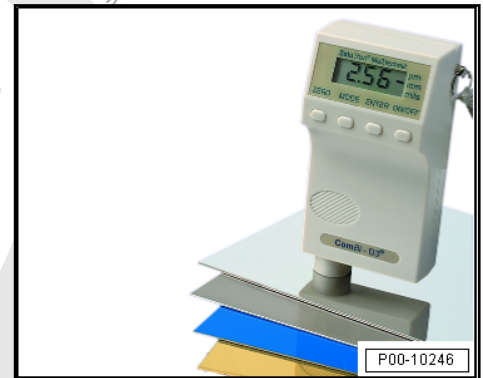
The paint layer thickness measuring instrument VAS 6272 is a combination measuring instrument used for interference-free measuring of paint coats on steel, iron and non-metallic surfaces. The menu navigation and easy-to-use parameter adjustments ensure a quality outcome and make this the perfect instrument for the workshop. This ergonomically-designed instrument has integrated measuring probes and is easy to operate, allowing for pinpoint accurate measurements.

#### **Technical Data**

Measuring range: progressive 0-3500 µm

#### **Delivery package**

1 measuring device



### **4.1.3 Paint Thickness Tester - VAS 6197-**

#### **Definition:**

- ◆ Paint Thickness Tester - VAS 6197-

#### **Product Description**

Fully-electronic layer thickness measuring instrument with two independently operating sensors and LCD screens. Measurements on different metallic base materials are possible. All non-magnetic layers on steel or iron on the one part, all isolating layers on non-ferrous metals (for example, aluminum or copper) on the other part. Due to the Hall sensor technology used, calibration is not required.

#### **Technical Data**

Measuring range: 0-5000 µm for both sensors

#### **Delivery package**

- ◆ Paint Layer Thickness Measuring Instrument
- ◆ Case
- ◆ Alignment plates
- ◆ Battery



### **4.1.4 Paint Thickness Tester - VAS 5278-**

#### **Definition:**

- ◆ Paint Thickness Tester - VAS 5278-



## Product Description

The paint thickness tester allows for exact and interference-free layer thickness measurement of paint coats on steel, iron or non-ferrous metals. The electronic instrument with digital LCD display shows the measurement via a menu.

## Technical Data

- ◆ Progressive measuring range: 0-5000 µm or 0-200 mils
- ◆ Base tolerance:  $\pm 1 \mu\text{m}$  or  $\pm 0.06 \text{ mils}$
- ◆ Temperature range: 0 °C - 60 °C (32 °F - 140 °F)
- ◆ Power supply: 9 volt block
- ◆ 4-digit liquid crystal display (LCD)

## Delivery package

- ◆ One measuring instrument for steel/iron
- ◆ One measuring instrument for non-magnetic metals
- ◆ One service bag
- ◆ Two zero test plates
- ◆ Operating instructions







## 4.1.5 Stone Chip Tester - VAS 5102A-

### Definition:

- ◆ Stone Chip Tester - VAS 5102A-

### Product Description

The Stone Chip Tester - VAS 5102A- is a proprietary tool of Volkswagen AG. It can identify whether chipped paint is the result of a material flaw/workmanship fault or whether it is the result of excess mechanical stress such as stone impacts or scratches. The test is based upon a simulation of the average amount of stress caused by objects (high-speed, low-mass sand/gravel) during a traffic collision.



### Note

- ◆ *The test procedure is described at length in the catalog "Analyzing Vehicle Paintwork".*
- ◆ *The instrument is subject to a yearly maintenance check by the manufacturer at the owner's expense.*

### Delivery package

- ◆ One stone impact tester and battery-powered metering device, pressure regulator and hose
- ◆ One power supply
- ◆ Calibration frame and check weigher
- ◆ Illuminated magnifier
- ◆ Foil with angle markings
- ◆ Adhesive tape 25 mm wide
- ◆ Filler-paste and scissors
- ◆ Granulate filling chute 10 x 100g (3.5 oz) granulate
- ◆ Hard shell case with rollers
- ◆ 100 test seals each of VW and Audi
- ◆ Instruction manual, rating scale, test certificate, test plan



#### 4.1.6 Pneumatic Brush Grinder Set - VAS 6446A-

##### Definition:

- ◆ Pneumatic Brush Grinder Set - VAS 6446A-

##### Product Description:

The Pneumatic Brush Grinder Set - VAS 6446A- serves to prepare the surface.

For example: removes underbody protection, sealant, and other adhesive materials. Removes corrosion and strips paint in the vehicle body area. Deep cleaning and has a sand-blasting effect; protects the material and has a material compressing effect. Low RPM.

##### Delivery contents:

- ◆ One pneumatic brush grinder set
- ◆ One bracket for brush grinder strap 23/28mm
- ◆ One bracket for brush grinder strap 11/28mm
- ◆ One brush grinder strap 23/28 mm
- ◆ Two brush grinder straps 11/28 mm
- ◆ Three special brush grinder straps 11/28/17 mm





## 4.1.7 Brush Grinder Set - VAS 6776-

### Definition:

- ◆ Brush Grinder Set - VAS 6776-

### Product Description:

The device is used to clean surfaces and remove corrosion in hard to reach areas. For example, it is suitable for joints, grooves, wheel housings, flange edges and door folds. It is operated pneumatically.

### Design and Technology

- ◆ A polyamide strap fitted with wires rotates in an adapter system.
- ◆ The adapter system is powered by a pneumatic drive unit.
- ◆ The impact force of the brushes is quadrupled via the accelerator bar.
- ◆ Thoroughly removes corrosion and coatings.

### Technical Data:

- ◆ Weight: 1.1 kg (2.43 lbs)
- ◆ Air pressure connection thread: 1/4" PT (delivered G 1/4")
- ◆ Hose diameter: 3/8" ID (9.5 mm)
- ◆ Rotation speed: 0-2600 U/minute
- ◆ Flow pressure: 7.5 bar (108.78 psi) / 110 psi
- ◆ Air consumption: 14.2 CFM (400 l/minute)
- ◆ Vibration: 1.45 m (4.8 feet)/sec<sup>2</sup> (EN ISO 8662-1; 8662-4)
- ◆ Sound pressure level: 84 dB (DIN 45635-21; ISO 3744)

### Delivery contents:

- ◆ One Blaster Drive Unit
- ◆ One Pneumatic Brush Grinder Set - Holder - 11/28mm VAS 6446/2
- ◆ One Brush Grinder Set - Swivel Joint VAS 6446/9
- ◆ One Brush Grinder Set - Air Pressure Regulator VAS 6446/8
- ◆ Two Brush Grinder Belts VAS 6776/1
- ◆ Two Brush Grinder Belts, Left VAS 6776/2
- ◆ Two Brush Grinder Belts, Right VAS 6776/3
- ◆ Two Brush Grinder Belts, Stainless Steel VAS 6776/4
- ◆ Two Accelerator bars including arm for use with the stainless steel belts
- ◆ One Hard shell case

### Replacement Parts:

- ◆ Brush Grinder Belt - VAS 6776/1- ASE 36308300000
- ◆ Brush Grinder Belt - VAS 6776/2- ASE 36308400000
- ◆ Brush Grinder Belt - VAS 6776/3- ASE 36308500000
- ◆ Brush Grinder Belt - VAS 6776/4- ASE 36308600000
- ◆ Accelerator Rod - VAS 6776/5- ASE 46308700000





- ◆ Accelerator Rod - VAS 6776/6- ASE 46308800000

#### 4.1.8 Suction Feed Spray Gun - V.A.G 1538-

##### Definition:

- ◆ Suction Feed Spray Gun - VAG 1538-

##### Product Description:

For the retroactive sealing of cavities in all new and used cars, as well as for applying underbody protection materials.

##### Design and Technology

Special spray gun with safety check valve and quick release coupling for probe holder.

- ◆ Maximum spray pressure: 10 bar (145.04 psi)
- ◆ Air connection thread: R 1/4
- ◆ Air consumption: approximately 100l/minute
- ◆ Weight: 1300 g

##### Delivery contents:

- ◆ Spray gun
- ◆ One liter steel can, painted
- ◆ Suction Feed Spray Gun - Hooked Probe - V.A.G 1538/1-
- ◆ Suction Feed Spray Gun - Nylon Probe - V.A.G 1538/2-

##### Replacement Parts:

- ◆ Suction Feed Spray Gun - Hooked Probe - V.A.G 1538/1-
- ◆ Suction Feed Spray Gun - Nylon Probe - V.A.G 1538/2-



##### Note

*Recommended accessories can be found in the ⇒ Workshop Equipment on Volkswagen Service Net .*



#### 4.1.9 Infrared Dryer - VAS 6873-

##### Definition:

- ◆ Infrared Dryer - VAS 6873-

##### Product Description:

The short-wave infrared dryer is used to quickly dry paste, filler, base paint, top coats and clear coats for minor repairs.

##### Technical Data:

- ◆ 220-240 V, 1 PH+PE
- ◆ 4 A

##### Delivery contents:

Complete hand-held dryer with connector and operating instructions

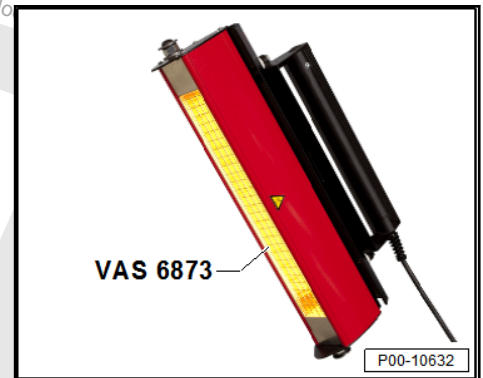
##### Replacement Parts:

Stand - VAS 6873/1- ASE 434 392 00 000



##### Note

Observe the manufacturer operating instructions.



#### 4.1.10 Stand - VAS 6873/1-

##### Definition:

- ◆ Stand - VAS 6873/1-

##### Product Description:

Stand - VAS 6873/1- with programmable timer

##### Technical Data:

- ◆ 220-240 V, 1 OH+PE

##### Delivery contents:

Complete stand with programmable timer and installation instructions



##### Note

Observe the manufacturer installation instructions.





#### 4.1.11 Infrared Dryer - VAS 6874-

##### Definition:

- ◆ Infrared Dryer - VAS 6874-

##### Product Description:

The infrared dryer is used to dry paste, filler, base paint, top coats and clear coats on vertical surfaces using two programmable timers for evaporation and hardening.

##### Technical Data:

- ◆ 230 V, 1 PH+PE
- ◆ 3 KW
- ◆ 13 A

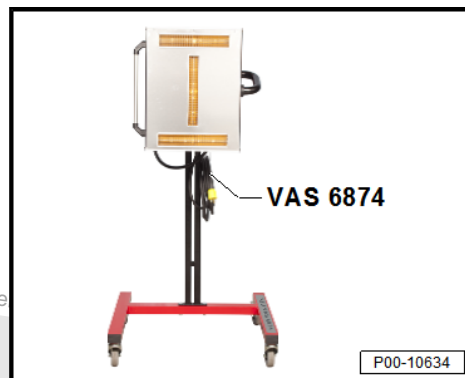
##### Delivery contents:

Complete strand dryer with assembly instructions and operating instructions



##### Note

*Observe the manufacturer assembly instructions and operating instructions.*



#### 4.1.12 Infrared Dryer - VAS 6875-

##### Definition:

- ◆ Infrared Dryer - VAS 6875-

##### Product Description:

The infrared dryer is used to dry paste, filler, base paint, top coats and clear coats on vertical and horizontal surfaces using two programmable timers for evaporation and hardening.

##### Technical Data:

- ◆ 230 V, 1 PH +PE
- ◆ 3 KW
- ◆ 13 A

##### Delivery contents:

Complete strand dryer with assembly instructions and operating instructions



##### Note

*Observe the manufacturer assembly instructions and operating instructions.*





### 4.1.13 Infrared Dryer - VAS 6876

#### Definition:

- ◆ Infrared Dryer - VAS 6876

#### Product Description:

The infrared dryer is used to dry paste, filler, base paint, top coats and clear coats on vertical and horizontal surfaces.

- ◆ Short-wave infrared dryer with a cassette
- ◆ 2 power stages with 12 pre-set programs and 3 free programs with automatic time control
- ◆ Automatic distance measuring

#### Technical Data:

- ◆ 400 V, 3 PH+PE
- ◆ 3 KW
- ◆ 5 A
- ◆ 16 A slow-blow fuse

#### Delivery contents:

Complete strand dryer with assembly instructions and operating instructions



#### Note

Observe the manufacturer assembly instructions and operating instructions.







#### 4.1.14 Infrared Dryer - VAS 6877-

##### Definition:

- ◆ Infrared Dryer - VAS 6877-

##### Product Description:

The infrared dryer is used to dry paste, filler, base paint, top coats and clear coats on vertical and horizontal surfaces.

- ◆ Short-wave infrared dryer with a cassette
- ◆ 2 power stages with 12 pre-set programs and 3 free programs with automatic time control
- ◆ Automatic distance measuring

##### Technical Data:

- ◆ 400 V, 3 PH+PE
- ◆ 6 KW
- ◆ 9 A
- ◆ 16 A slow-blow fuse

##### Delivery contents:

Complete strand dryer with assembly instructions and operating instructions



##### Note

*Observe the manufacturer assembly instructions and operating instructions.*







### 4.1.15 Infrared Dryer - VAS 6878-

#### Definition:

- ◆ Infrared Dryer - VAS 6878-

#### Product Description:

The infrared dryer is used to dry paste, filler, base paint, top coats and clear coats on vertical and horizontal surfaces.

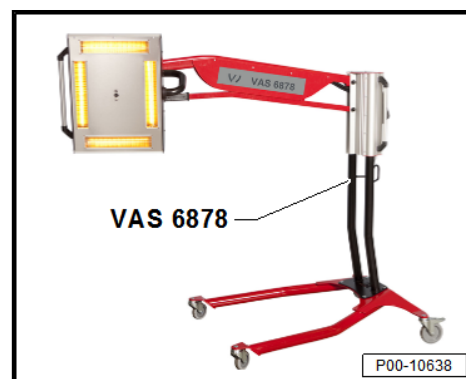
- ◆ Short-wave infrared dryer with a cassette
- ◆ 12 pre-set programs with 3 free programs
- ◆ Fully automatic drying process with pyrometer for temperature control, laser pointer and automatic distance measurement

#### Technical Data:

- ◆ 400 V, 3 PH+PE
- ◆ 6 KW
- ◆ 9 A
- ◆ 16 A slow-blow fuse

#### Delivery contents:

Complete strand dryer with assembly instructions and operating instructions



#### Note

*Observe the manufacturer assembly instructions and operating instructions.*





## 4.1.16 Infrared Heater - VAS 6879-

### Definition:

- ◆ Infrared Heater - VAS 6879-

### Product Description:

The infrared dryer is used to dry paste, filler, base paint, top coats and clear coats on vertical and horizontal surfaces.

- ◆ Short-wave infrared dryer with two cassettes
- ◆ 12 pre-set programs with 3 free programs
- ◆ Fully automatic drying process with pyrometer for temperature control, laser pointer and automatic distance measurement

### Technical Data:

- ◆ 400 V, 3 PH+PE
- ◆ 12 KW
- ◆ 9 A
- ◆ 16 A slow-blow fuse

### Delivery contents:

Complete strand dryer with assembly instructions and operating instructions



### Note

*Observe the manufacturer assembly instructions and operating instructions.*

## 4.2 Dust Cloths

⇒ ["4.2.1 Duster VAS 6177", page 394](#)

⇒ ["4.2.2 White Polishing Cloth VAS 6176", page 395](#)

### 4.2.1 Duster - VAS 6177-

#### Definition:

- ◆ Duster - VAS 6177-

#### Product Description:

Dust cloth with extremely effective light adhesive formula for critical cleaning tasks. Unlike traditional dust cloths, this cloth does not leave any chemical residue on the surface or on the hands. This ensures that the surface in question is free of adhesive residue and fingerprints. This reduces the risk of streaking noticeably when processing water-based base paint. Due to using modern spunbound technology, the cloth produces very little lint and does not fray. At the same time, it is wonderfully suited for repairs on plastic, since it reduces the static charge from the plastic parts.

Size: 380 x 430 mm

#### Application areas:

- ◆ Intermediate cleanings before applying additional layers
- ◆ Removing dry particles before applying the top coat
- ◆ Cleaning plastic parts

Folded four times in a sealed bag with a zip closure

**Definition:**

- ### Product Description:

Size: 400 x 365 mm per cloth

- ◆ Hand polishing
- ◆ Finishing work on exterior surfaces
- ◆ Interior cleaning

275 fleece cloths, rolled up in a dispenser box (tear-off)

authorised by Volkswagen AG. Volkswagen AG does not g

# Cautions & Warnings

**Please read these WARNINGS and CAUTIONS before proceeding with maintenance and repair work. You must answer that you have read and you understand these WARNINGS and CAUTIONS before you will be allowed to view this information.**

- If you lack the skills, tools and equipment, or a suitable workshop for any procedure described in this manual, we suggest you leave such repairs to an authorized Volkswagen retailer or other qualified shop. We especially urge you to consult an authorized Volkswagen retailer before beginning repairs on any vehicle that may still be covered wholly or in part by any of the extensive warranties issued by Volkswagen.
- Disconnect the battery negative terminal (ground strap) whenever you work on the fuel system or the electrical system. Do not smoke or work near heaters or other fire hazards. Keep an approved fire extinguisher handy.
- Volkswagen is constantly improving its vehicles and sometimes these changes, both in parts and specifications, are made applicable to earlier models. Therefore, part numbers listed in this manual are for reference only. Always check with your authorized Volkswagen retailer parts department for the latest information.
- Any time the battery has been disconnected on an automatic transmission vehicle, it will be necessary to reestablish Transmission Control Module (TCM) basic settings using the Volkswagen Factory Approved Scan Tool (ST).
- Never work under a lifted vehicle unless it is solidly supported on stands designed for the purpose. Do not support a vehicle on cinder blocks, hollow tiles or other props that may crumble under continuous load. Never work under a vehicle that is supported solely by a jack. Never work under the vehicle while the engine is running.
- For vehicles equipped with an anti-theft radio, be sure of the correct radio activation code before disconnecting the battery or removing the radio. If the wrong code is entered when the power is restored, the radio may lock up and become inoperable, even if the correct code is used in a later attempt.
- If you are going to work under a vehicle on the ground, make sure that the ground is level. Block the wheels to keep the vehicle from rolling. Disconnect the battery negative terminal (ground strap) to prevent others from starting the vehicle while you are under it.
- Do not attempt to work on your vehicle if you do not feel well. You increase the danger of injury to yourself and others if you are tired, upset or have taken medicine or any other substances that may impair you or keep you from being fully alert.
- Never run the engine unless the work area is well ventilated. Carbon monoxide (CO) kills.
- Always observe good workshop practices. Wear goggles when you operate machine tools or work with acid. Wear goggles, gloves and other protective clothing whenever the job requires working with harmful substances.
- Tie long hair behind your head. Do not wear a necktie, a scarf, loose clothing, or a necklace when you work near machine tools or running engines. If your hair, clothing, or jewelry were to get caught in the machinery, severe injury could result.
- Do not re-use any fasteners that are worn or deformed in normal use. Some fasteners are designed to be used only once and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the recommendations in this manual - replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.

# Cautions & Warnings

- Illuminate the work area adequately but safely. Use a portable safety light for working inside or under the vehicle. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.
- Friction materials such as brake pads and clutch discs may contain asbestos fibers. Do not create dust by grinding, sanding, or by cleaning with compressed air. Avoid breathing asbestos fibers and asbestos dust. Breathing asbestos can cause serious diseases such as asbestosis or cancer, and may result in death.
- Finger rings should be removed so that they cannot cause electrical shorts, get caught in running machinery, or be crushed by heavy parts.
- Before starting a job, make certain that you have all the necessary tools and parts on hand. Read all the instructions thoroughly; do not attempt shortcuts. Use tools that are appropriate to the work and use only replacement parts meeting Volkswagen specifications. Makeshift tools, parts and procedures will not make good repairs.
- Catch draining fuel, oil or brake fluid in suitable containers. Do not use empty food or beverage containers that might mislead someone into drinking from them. Store flammable fluids away from fire hazards. Wipe up spills at once, but do not store the oily rags, which can ignite and burn spontaneously.
- Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use these tools to tighten fasteners, especially on light alloy parts. Always use a torque wrench to tighten fasteners to the tightening torque listed.
- Keep sparks, lighted matches, and open flame away from the top of the battery. If escaping hydrogen gas is ignited, it will ignite gas trapped in the cells and cause the battery to explode.
- Be mindful of the environment and ecology. Before you drain the crankcase, find out the proper way to dispose of the oil. Do not pour oil onto the ground, down a drain, or into a stream, pond, or lake. Consult local ordinances that govern the disposal of wastes.
- The air-conditioning (A/C) system is filled with a chemical refrigerant that is hazardous. The A/C system should be serviced only by trained automotive service technicians using approved refrigerant recovery/recycling equipment, trained in related safety precautions, and familiar with regulations governing the discharging and disposal of automotive chemical refrigerants.
- Before doing any electrical welding on vehicles equipped with anti-lock brakes (ABS), disconnect the battery negative terminal (ground strap) and the ABS control module connector.
- Do not expose any part of the A/C system to high temperatures such as open flame. Excessive heat will increase system pressure and may cause the system to burst.
- When boost-charging the battery, first remove the fuses for the Engine Control Module (ECM), the Transmission Control Module (TCM), the ABS control module, and the trip computer. In cases where one or more of these components is not separately fused, disconnect the control module connector(s).
- Some of the vehicles covered by this manual are equipped with a supplemental restraint system (SRS), that automatically deploys an airbag in the event of a frontal impact. The airbag is operated by an explosive device. Handled improperly or without adequate safeguards, it can be accidentally activated and cause serious personal injury. To guard against personal injury or airbag system failure, only trained Volkswagen Service technicians should test, disassemble or service the airbag system.

# Cautions & Warnings

- Do not quick-charge the battery (for boost starting) for longer than one minute, and do not exceed 16.5 volts at the battery with the boosting cables attached. Wait at least one minute before boosting the battery a second time.
- Never use a test light to conduct electrical tests of the airbag system. The system must only be tested by trained Volkswagen Service technicians using the Volkswagen Factory Approved Scan Tool (ST) or an approved equivalent. The airbag unit must never be electrically tested while it is not installed in the vehicle.
- Some aerosol tire inflators are highly flammable. Be extremely cautious when repairing a tire that may have been inflated using an aerosol tire inflator. Keep sparks, open flame or other sources of ignition away from the tire repair area. Inflate and deflate the tire at least four times before breaking the bead from the rim. Completely remove the tire from the rim before attempting any repair.
- When driving or riding in an airbag-equipped vehicle, never hold test equipment in your hands or lap while the vehicle is in motion. Objects between you and the airbag can increase the risk of injury in an accident.

**I have read and I understand these Cautions and Warnings.**